COUNCIL COMMUNICATION

TO: THE CITY COUNCIL COUNCIL MEETING DATE: JULY 6, 1988

FROM: THE CITY MANAGERS OFFICE

SUBJECT: PUBLIC HEARING TO CONSIDER CERTIFYING, AS ADEQUATE, THE FINAL ENVIRONMENTAL IMPACT REPORT (EIR) OF WHITE SLOUGH WATER POLLUTION CONTROL FACILITY EXPANSION

RECOMMENDED ACTION: That the City Council, at the conclusion of the Public Hearing, determine if the Environmental Impact Report (EIR) prepared by Jones & Stokes Associates, Inc. for the proposed White Slough Water Pollution Control Facility Expansion Project is adequate and if so, certify the document.

BACKGROUND INFORMATION: The City Council, at its last regular meeting June 15, 1988, set a public hearing for the purpose of determining the adequacy of the Final Environmental Impact Report for the City's proposed White Slough Water Pollution Control Facility expansion project. Attached is a copy of the final EIR for this project.

Jones & Stokes Associates started the preparation of this EIR approximately one year ago. They will be at the public hearing to present this document to the City Council. The City's Engineer will also be at the public hearing to answer any technical questions. The firm of Black & Veatch is presently under contract with the City of Lodi to provide the detailed design and prepare the contract bidding documents for the expansion project.

The proposed schedule for this project is as follows:

January 1989	-	Approve plans and specifications by City Council
April 1989	-	Award construction contract
May 1989	-	Begin construction
January 1991	-	Construction completion and acceptance by City Council

for JAMES B. SCHROEDER
Community Development Director

JBS/JLR/cag

Attachment

CC21/TXTD.01C June 29, 1988

Seidler-Fitzgerald
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CITY OF LODI
1988 WASTEWATER TREATMENT PLANT EXPANSION PROJECT
FINANCING ALTERNATIVES
JUNE 15, 1988

	Financing Alternatives		
	A	B	C
Project Costs	$10,931,000	$10,931,000	$10,931,000
City Contribution to Project	<-0->	<1,000,000>	<2,000,000>
Net Project to be Financed	10,931,000	9,931,000	8,931,000
Date of Financing	7/27/88	7/27/86	7/27/88
Land Acquisition	2/1/89	2/1/89	2/1/89
Construction Period	20 mos.	20 mos.	20 mos.
start	5/1/89	5/1/89	5/1/89
End	1/1/91	1/1/92	1/1/91
Type of Financing	Cert. of Part.	Cert. of Part.	Cert. of Part.
Rating	Unrated	Unrated	Unrated
Average Interest Rate	8.25%	8.25%	8.25%
Life of Issue	30 yrs.	30 yrs.	30 yrs.
Principal Amount	$11,495,000	$10,345,000	$ 9,200,000
Use of Funds from Issue:			
Construction and Land Acquisition	13,931,000	10,931,000	10,931,000
Less: City Contribution	<-0->	<1,000,000>	<2,000,000>
Interest Earned during Const.	<1,149,000>	<1,135,000>	<1,122,000>
Nat Construction from Issue	9,782,000	8,796,000	7,309,000
Debt Service Reserve Fund	1,036,000	932,000	828,000
Funded Interest	-0-	-0-	-0-
Cost of Issuance	677,000	617,000	563,000
Principal Amount	$11.495,000	$10,345,000	$ 9,200,000
Annual Cash Flow (Beg. FY 88/89)			
Average Net Debt Service	$ 963,000	$ 867,000	$ 770,000
Less: Fund Earnings @ 9.2%			
$2.5MM Fund	<230,000>		
1.5MM Fund		<138,000>	
0.5MM Fund			>
Net Cost to Sewer Enterprise	$ 733,000	$ 729,000	$ 724,000

515 South Figueroa Street • Los Angeles, California 90071-3396 • (213) 624-4832

NOTICE OF PUBLIC HEARING
BY THE CITY COUNCIL OF THE CITY OF LODI
TO CONSIDER CERTIFYING, AS ADEQUATE,
THE FINAL ENVIRONMENTAL IMPACT REPORT (EIR)
FUR THE WHITE SLOUGH WATER POLLUTION CONTROL FACILITY EXPANSION

A Public Hearing will be conducted by the City Council of the City of Lodi to consider certifying, as adequate, the Final Environmental Impact Report (EIR) for the White Slough Water Pollution Control Facility Expansion at 7:30 p.m., Wednesday, July 6 1988 in the Chambers of the Lodi City Council, second floor, 221 West Pine Street, Lodi, California.

Information regarding this matter may be obtained in the office of the City Clerk, 221 West Pine Street, Lodi, or by telephoning (209) 333-6702. All interested persons are invited to present their views either for or against the above proposal. Written statements may be filed with the City Clerk at any time prior to the hearing scheduled herein and oral statements may be made at said hearing.

If you challenge the subject Final Environmental Impact Report in court, you may be limited to raising only those issues you or someone else raised at the Public Hearing described in this notice or in written correspondence delivered to the City Clerk at, or prior to, the Public Hearing.

Dated: June 15, 1988

By Order of the City Council

Alice M. Reimche
City Clerk

Approved as to form

Bobby W. McNatt
City Attorney

Draft
Environmental impact Report

White Slough Water Pollution Control Facility Expansion

Prepared for:

City of Lodi, California

Prepared by:

Jones & Stokes Associates, Inc.
Sacramento, CA

April 1988

Mail to: State Clearinghouse, 1400 Tenth Street, Room 121, Sacramento, CA 95814 — 916/445-0613

See NOTE below

SCH # 87072105

NOTICE OF COMPLETION AND ENVIRONMENTAL DOCUMENT TRANSMITTAL FORM

1. Project Title: White Slough Water Pollution Control Facility Expansion

2. Lead Agency: City of Lodi 3. Contact Person: Jack Ronsko, DPW

3a. Street Address: 221 West Pine Street 3b. City: Lodi

3c. County: San Joaquin 3d. Zip: 95241-1910 3e. Phone: 209/333-6706

PROJECT LOCATION 4. County: San Joaquin 4a. City/Community: Lodi

4b. Assessor's Parcel No. None 4c. Section 23,24,25,26 Twp. T3N Range R5E

5a. Cross Streets: Interstate 5/Thorton Road 5b. For Rural, Nearest Community: Lodi

6. Within 2 miles: a. State Hwy # 12 b. Airports 0 c. Railways UPRR d. Waterways White Slough, Bishop Cut

7. DOCUMENT TYPE

CEQA

01. ___NOP
02. ___Early Cons
03. ___Neg Dec
04. X Draft EIR
05. ___Supplement/Subsequent EIR (Prior SCH No.: _____)

NEPA

09. ___NOI
10. ___FONSI
11. ___Draft EIS
12. ___EA

OTHER

13. ___Joint Document
14. ___Final Document
15. ___Other

06. ___NOE
07. ___NOC
08. ___NOD

8. LOCAL ACTION TYPE

01. ___General Plan Update
02. ___New Element
03. ___General Plan Amendment
04. ___Master Plan
05. ___Annexation
06. ___Specific Plan
07. ___Community Plan
08. ___Redevelopment
09. ___Rezone
10. ___Land Division (Subdivision, Parcel Map, Tract Map, etc.)
11. ___Use Permit
12. ___Waste Mgmt Plan
13. ___Cancel Ag Preserve
14. X Other Utility expansion

9. DEVELOPMENT TYPE

01. ___Residential: Units _____ Acres _____
02. ___Office: Sq. Ft. _____ Acres _____ Employees _____
03. ___Shopping/Commercial: Sq. Ft. _____ Acres _____ Employees _____
04. ___Industrial: Sq. Ft. _____ Acres _____ Employees _____
05. ___Water Facilities: MGD _____
06. ___Transportation: Type _____
07. ___Mining: Mineral _____
08. ___Power: Type _____ Watts _____
09. X Waste Treatment: Type domestic wastewater
10. ___OCS Related
11. ___Other: _____

10. TOTAL ACRES: 763 11. TOTAL JOBS CREATED: _____

12. PROJECT ISSUES DISCUSSED IN DOCUMENT

01. X Aesthetic/Visual
02. X Agricultural Land
03. X Air Quality
04. X Archaeological/Historical
05. ___Coastal Zone
06. X Economic
07. ___Fire Hazard
08. X Flooding/Drainage
09. ___Geologic/Seismic
10. ___Jobs/Housing Balance
11. ___Minerals
12. X Noise
13. X Public Services
14. X Schools
15. ___Septic Systems
16. X Sewer Capacity
17. ___Social
18. ___Soil Erosion
19. X Solid Waste
20. X Toxic/Hazardous
21. X Traffic/Circulation
22. X Vegetation
23. X Water Quality
24. X Water Supply
25. X Wetland/Riparian
26. X Wildlife
27. X Growth Inducing
28. ___Incompatible Landuse
29. ___Cumulative Effects
30. ___Other

13. FUNDING (approx) Federal $ 0 State $ 0 Total $ 8.1 million

14. [redacted]: Present use: water pollution control facility.
Zoning: **Public**

15. PROJECT DESCRIPTION:

Plant capacity expansion from 6.2 to 8.5 MGD. Plant Process improvement to produce **higher** quality effluent discharged to Delta waterways.

16. SIGNATURE OF LEAD AGENCY REPRESENTATIVE: Ken Cascadan DATE: 4/26/88

NOTE: Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. from a Notice of Preparation or previous draft document) please fill it in.

FORM REVISED 4/86 - REPLACES OA189

MARK DISTRIBUTION ON REVERSE

DRAFT
ENVIRONMENTAL IMPACT REPORT
FOR
WHITE SLOUGH WATER POLLUTION CONTROL FACILITY EXPANSION

Prepared for:

City of Lodi

Prepared by:

Jones & Stokes Associates, inc.
1725 - 23rd Street, Suite 100
Sacramento, CA 95816
916/444-5638

LAST DATE TO COMMENT

JUN 1 0 1988

April 1988

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Chapter 1

INTRODUCTION

City of Lodi Wastewater Treatment

All wastewater generated in the City of Lodi is collected and treated at the city-owned White Slough Water Pollution Control Facility (WPCF) situated 6.5 miles southwest of the central city. The WPCF, initially constructed in 1967, includes parallel treatment systems for domestic/commercial and industrial wastewater, although some industrial users discharge into the domestic system.

The capacity of the industrial wastewater system has remained unchanged since 1967, but in 1976 the domestic wastewater system was expanded from 3.5 to 5.8 million gallons per day (MGD), a 66-percent increase. In 1987, plant modifications were made to accommodate the current flow of about 6.0 MGD. As a result, the plant's capacity is now about 6.2 MGD.

Planning for additional capacity, to be described and assessed in this report, began in 1986. A two-phase expansion to 8.5 MGD was originally anticipated and described in the Notice of Preparation for this document, circulated in July 1987 (Appendix A). However, recently compiled growth statistics (Jones & Stokes Associates 1987) indicate a city growth rate from 1980 to 1987 that is about 50 percent higher than the rate originally projected by the project engineers for the ensuing decade (Stack & Veatch 1987b). Simultaneously, it became evident that wastewater flows were rapidly approaching the current design capacity of the WPCF, Accordingly, the 1987 expansion increment noted above was made, and design and environmental analysis of a major, single-phase expansion to 8.5 MGD was begun. The city intends to accomplish this capacity expansion as soon as possible, but it is not expected to become operational before the 1990-91 fiscal year. (The relationship of population growth to WPCF capacity is discussed in detail in Chapter 6 of this report.)

Requirement for an Environmental Impact Report

On July 6, 1987, the city's environmental review officer dstermined that the potential occurrence of significant environmental effects from expansion of the WPCF was readily foreseeable. The basis for this conclusion was an initial study (environmental assessment) included in the Notice of Preparation of this report (Appendix A). The requirement for preparation of an environmental impact report (EIR) in this situation, and the required content of such a report, derive from the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) and the State CEQA Guidelines promulgated by the Secretary of Resources (14 California Administrative Code 15000 et seq.).

An EIR is an informational document to aid local governments and state agencies- in their planning and decision-making functions. It is not the purpose of an EIR to recommend approval or denial of a proposed project.

Several actions must be taken by the City of Lodi and other responsible agencies once this document is made available to the public and governmental agencies for review and comment. The city is responsible for preparing responses to comments received on the draft document and for amending the document as. warranted. A decision to approve the project by the city, and the issuance of permits by responsible agencies, may follow after the city certifies that the EIR is adequate.

Discretionary Permits and Approvals Needed to Implement the Project

Expansion of the White Slough WPCF would require several approval actions by the City of Lodi and permit issuance by the Central Valley Regional Water Quality Control Board (RWQCB). No other responsible agencies (i.e., those having discretionary approval powers) have been identified.

City of Lodi

The city's approval actions must include:

- certification by the Lodi City Council that the final EIR (including the draft EIR, comments an the draft EIR, responses to comments, and amendments to the draft EIR, if any) has been completed in compliance with CEQA (State CEQA Guidelines Section 15090);
- findings and explanatory rationafe by the Lodi City Council regarding significant or potentially significant environmental effects identified in this document. For each such effect, the City of Lodi must find:
  - project alternatives, changes, or mitigation measures are being adopted that will lessen the impact to a less-than-significant level;
  - such alternatives, changes, or mitigation measures are within the responsibility and jurisdiction of another agency and have been or can and should be adopted; or
  - specific economic, social, or other considerations make infeasible the identified mitigation measures or project alternatives;
- decision by the Lodi City Council whether or how to carry out the project, in conjunction with making the required findings above; and
- submittal of a report by the City of Lodi Planning Commission to the Lodi City Council or its designee as to conformity with the city's general plan of the coordinated program of proposed public works for the ensuing fiscal year, prior to each fiscal year in which capital improvement expenditures for the proposed project are included (Government Code Section 65401).

Central Valley Regional Water Quality Control Board

Because the design flow of the WPCF will change, the city must file a new report of waste discharge with the RWQCB. In turn, the RWQCB must issue a new set of waste discharge requirements in the form of a National Pollutant Discharge Elimination System (NPDES) permit. These requirements may include:

- o effluent discharge limitations,
- o receiving water limitations,
- o effluent land disposal limitations,
- o sludge disposal requirements, and
- o monitoring and reporting requirements.

The requirements must be found to be consistent with the RWQCB's Water Quality Control Plan for the Sacramento-San Joaquin Delta Basin (5B).

Content and Format of This Report

A summary of the conclusions of this report follows this chapter. It is printed on colored paper for rapid access. Major Findings regarding direct impacts of the project are presented in table format. The growth-inducing impact of the project is summarized in "bullet" format.

The ensuing four chapters, Chapters 3-6, embody the detailed project analysis. Chapter 3 is a description of the proposed project objectives and characteristics. Chapter 4 examines alternatives to the proposed project, explains why some possible alternatives are considered infeasible, and defines other alternatives to be examined in detail in the ensuing chapter.

Chapter 5 defines the environmental setting of the project, predicts the direct project impacts, establishes the probable significance of these impacts, examines possible mitigation measures and their efficacy, considers avoidance or reduction of impacts offered by the project alternatives, and assesses other impacts that alternatives could generate. Thus, an assessment of the avoidability of each significant impact is presented. Where cumulative impacts may result from the project In conjunctions with other projects, the nature and significance of these impacts are described.

Chapter 6 assesses the growth-inducing impacts of the proposed project. Since expansion of the WPCF would allow continued growth of the city, the project may be considered to be "growth-inducing." Thus, as CEQA and the State CEQA Guidelines require, the impacts of this growth increment are assessed.

The remaining portions of the report support the analyses described above. Chapter 7 is a bibliography listing sources cited in the text and other persons and organizations consulted. Chapter 8 is a list of the preparers of the report. Appendices, as noted in the Table of Contents, than follow.

Chapter 2

SUMMARY

Proposed Project

The proposed project is the expansion of the City of Lodi's White Slough WPCF to accommodate increased domestic wastewater flows and the improvement of the treatment process to produce a higher quality effluent. The capacity of the WPCF was recently increased from 5.8 to 6.2 MGD in response to continuing city growth that had exhausted the plant's design capacity. The proposed improvements would increase the capacity another 37 percent tc 8.5 MGD.

Currently, treated effluent either is used to supplement industrial wastewater from a parallel system in irrigating the city's 655-acre agricultural lands, or is discharged into a Delta waterway. The choice primarily depends on two criteria: fully satisfying irrigation demands of the city's cropland, and precluding discharge into the Delta when oxygen dissolved in the receiving waters falls below an established minimum (5 milligrams per liter [mg/l]) or when suspended solids or biochemical oxygen demand of the effluent rises above the design treatment level (20 mg/l in summer; 30 mg/l November-June). These standards are established by the RWQCB for this particular facility. When these standards cannot be met during the nongrowing season, the effluent is stored in ponds for irrigation use during the following growing season.

Sludge derived from the treatment process currently accumulates in lagoons, although much of it has keen flowing into the industrial wastewater irrigation channel and has thus been spread along with the wastewater onto the agricultural fields.

The proposed project entails various improvements to the primary and secondary treatment components of the WPCF. These improvements would allow the plant to meet over 90 percent of the time a design treatment level of 10 mg/l for suspended solids and biochemical oxygen demand for effluent tc be released into surface waters. The treatment improvements would therefore result in a 50-percent reduction in the concentratioil of these pollutant parameters in summer.

Improvements to the irrigation system would allow the full use of the agricultural capability of the city's lands, based on nitrogen uptake of crops. Sludge would continue to be applied to these lands along with industrial wastewater, but at controlled, agronomic rates facilitated by improvements to the sludge processing system. To allow construction, the sludge accumulated in the lagoons would be dried onsite and trucked to a San Joaquin County landfill east of Lodi.

To help offset increased costs of treatment, a 250-kilowatt (kW) generator would be installed to produce electricity from the combustion of gases derived from the sludge digestion process.

Project Alternatives

The project engineers evaluated several effluent treatment options, effluent disposal options, and sludge dewatering and disposal options in formulating the proposed project. Some were rejected for providing no benefit over others having lesser cost. Remaining options were combined to form the alternatives considered in Chapter 4 of this report.

Five alternatives were found to be infeasible because they would

- fail to meet the project's objectives,
- offer no environmental benefits in relation to the proposed project, or
- entail costs that would exceed the city's financial ability to implement.

The latter reason applies to the alternative of applying all effluent to agricultural lands with no discharge into Delta waterways, an alternative that the RWQCB requires be evaluated.

Three alternatives to the proposed project are considered in detail in this report. The two effluent disposal alternatives are mutually exclusive, but the sludge disposal alternative can be selected or rejected independently. The alternatives are:

- E1. Effluent Discharge Priority. To maximize the lifespan of the soils on the city's lands in terms of heavy metal accumulation, effluent would be discharged into surface waters whenever it met the new design treatment standards (10 mg/l). Thus, full use would not be made of the site's nitrogen utilization capacity and agricultural potential.
- E2. Expanded Irrigation. The city agricultural lands would be increased in proportion to the increased design capacity of the WPCF and would be utilized to their agricultural capacity. Thus, surface water disposal of effluent meeting the design treatment level would be reduced in comparison to the proposed project.
- S. Land Application of Sludge by Mechanical Spreading. Sludge would be accumulated in lagoons and would be dewatered and trucked to agricultural lands between the WPCF and Lodi biannually.

Issues Raised

In response to circulation of an Initial Study and Notice of Preparation for the proposed project (Appendix A), letters of comment were received from eight public agencies. The issues raised are summarized as follows:

- effects of the increased discharge on surface waters of the Delta;
- effects of sludge disposal on shallow groundwater and surface run-off;
- relationship of a future Interstate 5 (I-5) interchange at the project site to the proposed project;
- compliance of the proposed cogeneration internal combustion engine with air quality regulations;
- effects of the increased discharge and other aspects of the project on fish and wildlife and their habitats and on special-status plants and animals;
- feasibility of providing wastewater service to the "Saddle City" highway-commercial development under county jurisdiction along I-5;
- effects of the project on agricultural uses in the area, including direct effects and induced conversions of agricultural land use to development; and
- cumulative effect of this project and others in inducing residential and commercial development.

These issues, together with identified concerns of the planning and public works staffs of the city, provided the basis for the impact analyses reported in this document.

Summary of Findings

In response to the widespread concern for water quality in Delta waterways, the city has decided to improve the WPCF treatment process and therefore release a significantly higher quality effluent into the Delta waterways as described earlier. Thus, even at full use of the WPCF's expanded capacity, the annual release of pollutants into the waterways is expected to diminish from the current level. Accordingly, environmental conditions in these waterways should generally improve. These impacts are described in detail in the "Water Resources" section of Chapter 5.

Impacts of the project can be divided into direct impacts, such as the surface water quality impacts noted above, and growth-inducing impacts that could result from the city growth accommodated by the WPCF expansion. Direct project impacts, mitigation measures, and effects of project alternatives are described in Tabie 2-1.

Table 2-1. Summary of Direct Project Impacts, Mitigation Measures, and impacts of the Alternatives

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
A. Unavoidable Significant Adverse Impacts				
None.				
B. Mitigable, Significant Adverse Impacts				
Soils	Buildup of heavy metals in the effluent and sludge-Irrigated soils, rendering them unusable after more than 100 years.	Require pretreatment of all industrial wastewater, emphasizing zinc removal.	Under Alternatives E1 and S, the use of the existing site for effluent disposal (under S) or an effluent and sludge disposal (under E1) would be greatly extended.	Under Alternative E2, 50 percent more acreage would be subjected to heavy metal buildup and become unusable after more than 100 years. Alternative S could feasibly be implemented utiiiring only soils and locations considered suitable.
C. Potentially Significant, Mitigable Adverse Impacts				
Water Resources				
Groundwater Resources	Potential contamination of groundwater with nitrogen compounds and other pollutants if agronomic rates of effluent and sludge application are exceeded.	Expand monitoring to record application rates and pollutant concentrations in effluent and sludge, soils, and groundwater. Expand acreage of land disposal or implement offsite sludge disposal if groundwater is degraded.	Under Alternative S, agronomic rates of sludge application could be easily maintained, preventing groundwater pollution. Under Alternative E1, only about 20 percent of the site's nitrogen cycling capacity would be used, virtually eliminating the potential for groundwater pollution.	Alternative E2 would Increase the land disposal acreage 50 percent and commensurately increase the potential for nitrogen loading of groundwater.
Biological Resources	Possible adverse effect on biological resources of the peripheral canal ponds from nutrients and toxics in groundwater inflow resulting from possible overapplication of effluent and sludge to adjacent agricultural lands.	Expand monitoring of groundwater quality as described immediately above.	Under Alternative E1, the potential for significant adverse effects would be virtually eliminated. Under Alternative S, the potential for toxic contarnination would be largely eliminated.	None,

Table 2-1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
C. Potentially Significant, Mitigable Adverse Impacts (Continued)				
Public Health and Safety	Potential health hazard for full water contact recreationists in Dredger Cut.	Increase effluent disinfection to a standard of 2.2 MPN coliform per 100 ml, or conspicuously post Dredger Cut to prohibit full water contact recreation.	Under Alternative EZ, the potential health hazard would be lessened but would still be potentially significant.	Under Alternative E1, the potential hazard would be further increased.
Public Services and Facilities				
Road System	Hauling of existing sludge on Harney Lane west of State Route (SR) 99, which is extremely sensitive to road surface damage. Approximately 300 trips required.	Avoid hauling on Harney Lane west of SR 99.	impacts of the alternatives are similar to proposed project,	Under Alternative S, local county roads in the area between the WPCF and Lodi could be damaged. This damage could be avoided by excluding disposal sites requiring access by Harney Lane. Ray Road, and Armstrong Road. Damage could be mitigated by slow haul speeds on these roads and road repair by the city as needed. Under Alternative S, mud and/or sludge could accumulate on local county roads. This could be avoided by hauling field vehicles and keeping haul vehicles off of exposed soils. It could be mitigated, by roadway cleaning as needed.
D. Less-Than-Significant Impacts				
Water Resources				
Flood Hazard	No effect on flood depths, flood extent, or floodflow velocities,	None needed.	NA	None

Table 2-1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant Impacts (Continued)				
Water Resources (Continued)				
Flood Hazard (Continued)	Some potential for floodwater contamination by floods more frequent than 100-year flood due to effluent and sludge residuals in irrigated fields.	None available.	NA	Alternatives E2 and S: Some potential for floodwater contamination east of I-5 by very infrequent floods.
Groundwater Resources	No effect on groundwater depth or direction of flow.	None needed.	NA	None
Surface Water Resources	Decrease in annual waste load discharged into Dredger Cut, but increase in the number of days and total volume of surface water discharge.	None needed.	NA	Alternative E2 would reduce both the volume of effluent and annual waste load discharged into surface waters when compared to the proposed project. Alternative S would increase the risk of sludge material being washed into surface waters.
Biological Resources	Loss of weedy vegetation in plant treatment works area and along irrigation system conveyances to be improved.	None needed.	NA	None
	Possible effect on fisheries, and wildlife in Delta waterways, and in marshes and peripheral canal ponds during overflow periods, due to net increases in discharged soluble nutrients.	None needed.	Under Alternative E1, the potential for adverse effects would be moderately increased. Under Alternative E2, the potential would be moderately decreased.	Under Alternative S, adverse impacts on biological resources in the sludge disposal study area would only occur if sludge were applied to lands supporting natural habitats. Agricultural acreage is readily available, however.

Table 2-1, Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant Impacts (Continued)				
Land Use	Treatment plant reconstruction within the existing plant area, and some intensification of agricultural **use** on acreage currently used for irrigated agricultural.	None needed,	**NA**	Under Alternative **E1**, nutrient application to the city's fields would diminish to **20** percent **of** the current level, resulting in substantial reduction in agricultural production. Slowed heavy metal accumulation would extend the duration of intensive agriculture greatly. Under Alternative E2, cropping patterns would change, and cropping options would be reduced on an adjacent **305** acres acquired; fertilizer nerds would diminish and fresh irrigation waters would become available to other users. Under Alternative S, **ZOO-1,000** acres of agricultural land supporting field crops, alfalfa, **or** pasture in the area between the **WPCF** and Lodi would become subject to cropping limitations, and cropping patterns may change. Fertilizer needs would diminish. Farmers' ability to respond quickly to changing market demands would be decreased, although the city could compensate farmers' **for** such implied **losses.**

Table 2-1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant impacts (Continued)				
Land Use (Continued)	Possible temporary annoyance of nearest residents duo to onsite sludge drying prior to project construction. (See also "Air Quality" below.)	None needed.	NA	None.
	Provision for future fire station construction and staff occupancy within 500 feet of areas used for land disposal of undisinfected sludge. (See also "Public Health and Safety" below.)	None needed.	NA	None.
Public Services and Facilities				
Solid Waste Disposal	Disposal of nonhazardous sludge currently stored onsite, after partial drying, at a suitable landfill having adequate capacity.	Other than required drying to 50 percent solids component, none needed.	NA	None
	Potential for occasional landfilling of sludge high In heavy metals or other toxic substances at landfills appropriate to measured concentrations of hazardous substances,	Other than required testing of concentrations of hazardous substances and use of appropriate landfill site so indicated, none needed.	NA	None
Road System	Minor increase in local traffic flow for approximately 7 days as existing sludge is hauled to the Harney Lane landfill.	None needed.	NA	Alternative S would Involve a minor increase in local traffic flow for short periods In the spring and fall,
	Closure of one lane of Thornton Road, which has low traffic volumes, to frcilitate reconstruction of a concrete irrigation ditch, utilizing flagmen.	Other than use of flagman, none needed.	NA	None

Table 2-1. Continued

Resource	impacts	Mitigation Measures	Impacts of the Alternatives: Significant impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant Impacts (Continued)				
Air Quality	Dust generation from construction activity.	Watering of exposed soils.	NA	None
	Odor emissions in a sparsely populated agricultural area from airdrying of existing sludge prior to disposal at a landfill site.	None needed.	NA	None
	Pollutant emissions from sludge-hauling truck engines.	None needed.	NA	None
	Pollutant emissions from open components of the treatment system and from cogeneration system fueled by digester gas.	None needed.	NA	None
	Occasional odor emissions during periods of treatment process upset or major blooms of algae in effluent storage ponds,	None needed other than restoration of design treatment process and pH adjustment, aeration, or chemical oxidation of storage ponds,	NA	Alternative S would result in odor emissions when sludge was partially dried at the plant and again when spread on agricultural lands in the study area. Sparse population near the plant and observance of a 500-foot buffer between disposal sites and residences would render the impact less than significant.
	Noise emission from construction activities.	None needed.	NA	None.
	Noise emission from hauling of iagooned sludge to the landfill.	None needed.	NA	Alternative S would result in less-than-significant noise emissions from hauling sludge in spring and fall about five trips per day during normal work hours.
	Noise emissions from facility operations,	None needed.	NA	None.

Table 2-1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant impacts (Continued)				
Public Health end Safety	Minor potential for increased nitrate levels in deeper groundwater utilized for domestic water supply.	None needed.	NA	NA
	Continued potential for bacterial contamination of any domestic water supply well placed within 500 feet of the effluent and sludge disposal fields (e.g., county fire station well).	Allow no domestic water supply wells to be drilled within 500 feet of the disposal areas.	NA	NA
Cultural Resources	Earth gradlng in previously graded areas.	If resources unexpectedly encountered, determine impact significance and develop mitigation plan through services of a quallfled archaeologist.	NA	Under Alternative S, weathering rates of undiscovered cultural resources in selected sludge disposal areas could accelerate, or such resources could be disturbed during field preparation. A known burial site in the area could be avoided by field marking or excluding the general area from disposal consideration.
Energy	Gasoline or diesel fuel consumption in hauling 290 25-ton truckloads of sludge 20 miles to the Harney Lane landfill during project construction.	None needed,	NA	Alternative S would require significant annual fuel consumption in hauling 610 (initially)-770 (at full utilization) 25-ton truck-loads of sludge 5 miles to agricultural fields, and additional fuel consumption in spreading the sludge.

Table 2-1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other impacts Caused
O. Less-Than-Significant Impacts (Continued)				
Energy (Continued)	Increased electrical energy consumption to pump and treat increased wastewater flows, and increased electrical generation from waste gas now being flared at the site.	None needed.	NA	None
Aesthetics and Recreational Environment	Creation of a concrete, egg-shaped digester extending 62 feet above ground in an existing industrial site to be partially visible to freeway users but generally not to recreationists in neighboring aquatic areas,	None needed, but installation could be utilized for display of the city's logo.	NA	None
	Intermittent odors could diminish the aesthetic character of some fishing locations. (See also "Air Quality" above.)	None needed.	NA	None

Gr cing Impa

The **proposed WPCF** expansion would remove a major obstacle to growth in Lodi. In this sense, the project would be growth-inducing, although the city **may** control growth through its planning functions.

Assuming residential, commercial, and light industrial activities grow at similar rates, the **WPCF** expansion would allow the city's population to expand by approximately 18,200 persons. Thus, the city would grow about 40 percent.

If the city's recent growth rate (3.8 percent per year) persists in the future, the growth increment allowed by the **WPCF** expansion would materialize in about 8-9 years. In comparison, if Lodi's growth rate were reduced to 2 percent per year, about **16** years of such growth could be accommodated.

Expansion of the city by 40 percent could have many important effects on surrounding agriculture, scenic values, wildlife habitats, the city's small town character, and the city's service systems. Some of these effects are potentially substantial adverse impacts. A few impacts would be unavoidable if the growth occurs, but many could be avoided or mitigated through careful management of growth unless the historically high growth rate persists. The city's present ongoing general plan revision process may define such a growth management process.

In this report, a comprehensive assessment of the impacts resulting from the growth increment allowed by the WPCF expansion is presented, and mitigation methods are generally described, and unavoidable impacts are identified. The development of a detailed growth management plan, however, is deferred to the impending general plan revision process,

The following is a summary of the growth increment impacts [see footnote explanation following] :

- urbanization of 1,300 acres of currently rural lands adjacent to the city, more than 90 percent of which have prime agricultural soils supporting vineyards, orchards, or other agricultural production[a];
- construction of more than 6,500 residential units[b];
- creation of more than 6,000 jobs[b];
- increase in water demand of 5.5 MGD, requiring development of about seven wells or acquisition of new surface water rights[c,d];
- provision of several stormwater detention basins, requiring substantially larger acreages on a per capita basis than the current system[a,d]
- addition of 17-18 new police officers, seven to eight support staff, six to seven patrol cars, and office space to maintain the current level of police protection[d];

- addition of 15-19 new firefighters, equipment, vehicles, support staff, gnd a new station to maintain the current level of fire protection ;
- provision of about 100 teachers and classrooms, support personnel, and support facilities to education about 3,000 additional students[d],
- acquisition and development of 36 acres of parkland[c,d];
- disposal of an additional *22,000* tons of solid waste per year, representing 2 percent of the estimated capacity of the new Harney Lane landfill[c,d];
- generation of at least 53,000 vehicle trips per day, causing significant congestion at certain intersections unless road system capacities are continuousiy enlarged[d,e],
- increase in carbon monoxide concentrations near congested intersections, possibly exceeding established health standards';
- increase in noise levels near roadways[c];
- potential for loss of important natural habitats and heritage oaks[e]; and
- decrease in water quality of the Mokelumne River and other surface waters from release of sediment during construction[e] and from ongoing urban runoff[a]; decrease in fish populations[c].

Notes: [a] significantly adverse, unavoidable
[b] significant but not adverse
[c] potentially significant, ability to mitigate unknown
[d] significant fiscal impact
[e] significantly adverse, mitigable

The closing section of Chapter 6 assesses the fiscal implications to the City of Lodi in providing public services required for the growth increment. This discussion is not summarized here.

The Environmentally Superior Alternative

Alternative **E2,** Expanded Irrigation, is the environmentally superior alternative because it minimizes the potential risk of adverse impacts on Delta waterways and represents fuller use of wastewater nutrients for agricultural production. However, it is noted that the proposed project is not expected to cause a significant adverse impact on the Delta water quality and biological resources. The proposed project also entails significant use of wastewater for agricultural production.

The sludge disposal alternative considered herein, Alternative **S,** involving offsite sludge disposal by mechanical means, is not considered environmentally superior to the proposed project. If the proposed project is accompanied by careful monitoring and control of sludge application rates to

match nitrogen-uptake capacities of the city's agricultural fields, a significant impact to groundwater quality would not be expected. Thus, Alternative S would offer *no* benefit in this regard. However, Alternative S does imply substantially higher costs from increased labor and fuel consumption, and possibly from local road repair.

Issues Remaining to Be Resolved

Subsequent to certifying that this document has been completed in compliance with CEQA, the city must:

- reaffirm its decision to adopt the proposed project or select one or more of the alternatives to the proposed project; and

- adopt or reject mitigation measures that reduce significant or potentially significant adverse impacts to less-than-significant levels, and, in the case of rejection, articulate the overriding considerations.

In addition, any other agencies having discretionsry authority over the project must exercise that authority and establish conditions for approval of the project. In particular, the RWQCB must reestablish water quality standards for discharged effluent and receiving waters and must approve a method of sludge disposal.

Chapter 3

PROJECT DESCRIPTION

Project Location

The City of Lodi is located at the juncture of the Sacramento and San Joaquin Valleys, about 50 miles east of the Carquinez Strait and 25 mites west of the Sierra Nevada foothills. Situated between Sacramento and Stockton on State Highway 99, it is the northernmost city of San Joaquin County [Figure 3-1).

The WPCF is located 6.5 miles west-southwest of the central city, or about 3.5 miles beyond the present city limits. This agricultural area is about 2 miles east of White Slough, a component of the eastern portion of the San Joaquin-Sacramento River Delta System (Figure 3-2). The proposed expansion of the physical plant would be within the existing plant area, and proposed effluent and sludge disposal would continue to occur on city-owned agricultural lands surrounding the site. The plant area and the city's agricultural lands constitute "project site" as described in this report.

Project Objective

As described in Chapter 1, the unused WPCF treatment capacity is very small and continues to diminish. One objective of the proposed expansion is to increase wastewater treatment capacity so that the City of Lodi can continue to grow over the next 1 to 2 decades. Expansion would eliminate an imminent growth impediment, which will probably materialize within the next two years, prior to the anticipated completion in early 1991. (See "Growth-Inducing Impacts" in Chapter 4.) Upon completion of the proposed project, the city's growth rate could be managed independently of wastewater treatment capacity for the ensuing 1 to 2 decades.

A second objective of the proposed expansion is to improve the quality of effluent being discharged to surface waters.

Project Area Description

The existing WPCF, site of the proposed improvements, is within low-lying agricultural lands bordering sloughs and distributary river channels of the San Joaquin-Sacramento River Delta system. Site elevation is between 5 and 10 feet above mean sea level. The surrounding area is entirely rural and sparsely populated. The nearest farm residence is about one-quarter mile from the site on an adjoining ownership. The mean annual precipitation is about 16 inches, and irrigation is extensive in the area for the production of field crops and pasture forage.

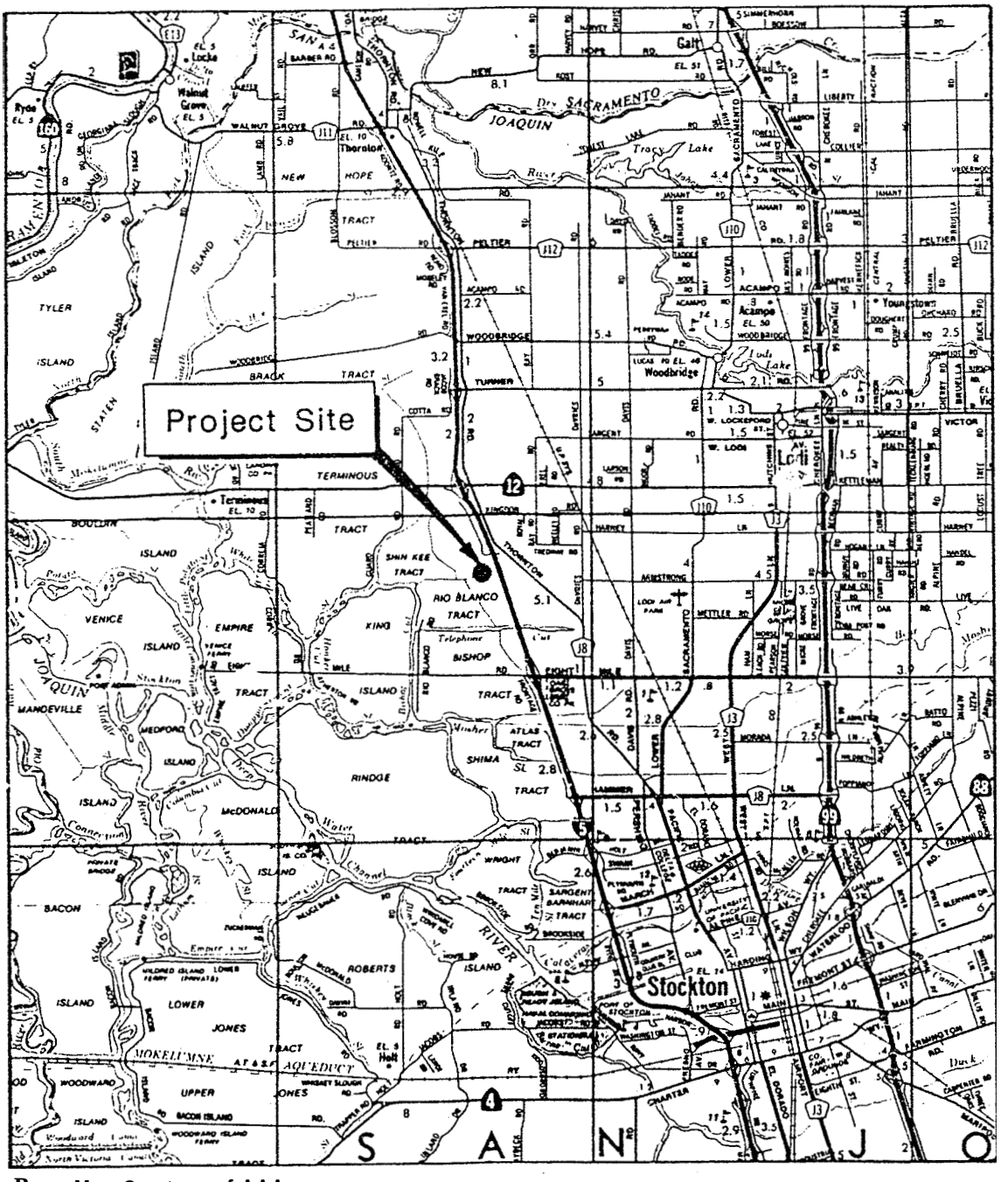


FIGURE 3-1. LOCATION **MAP** CITY **OF** LODI WHITE SLOUGH WATER POLLUTION CONTROL FACILITY

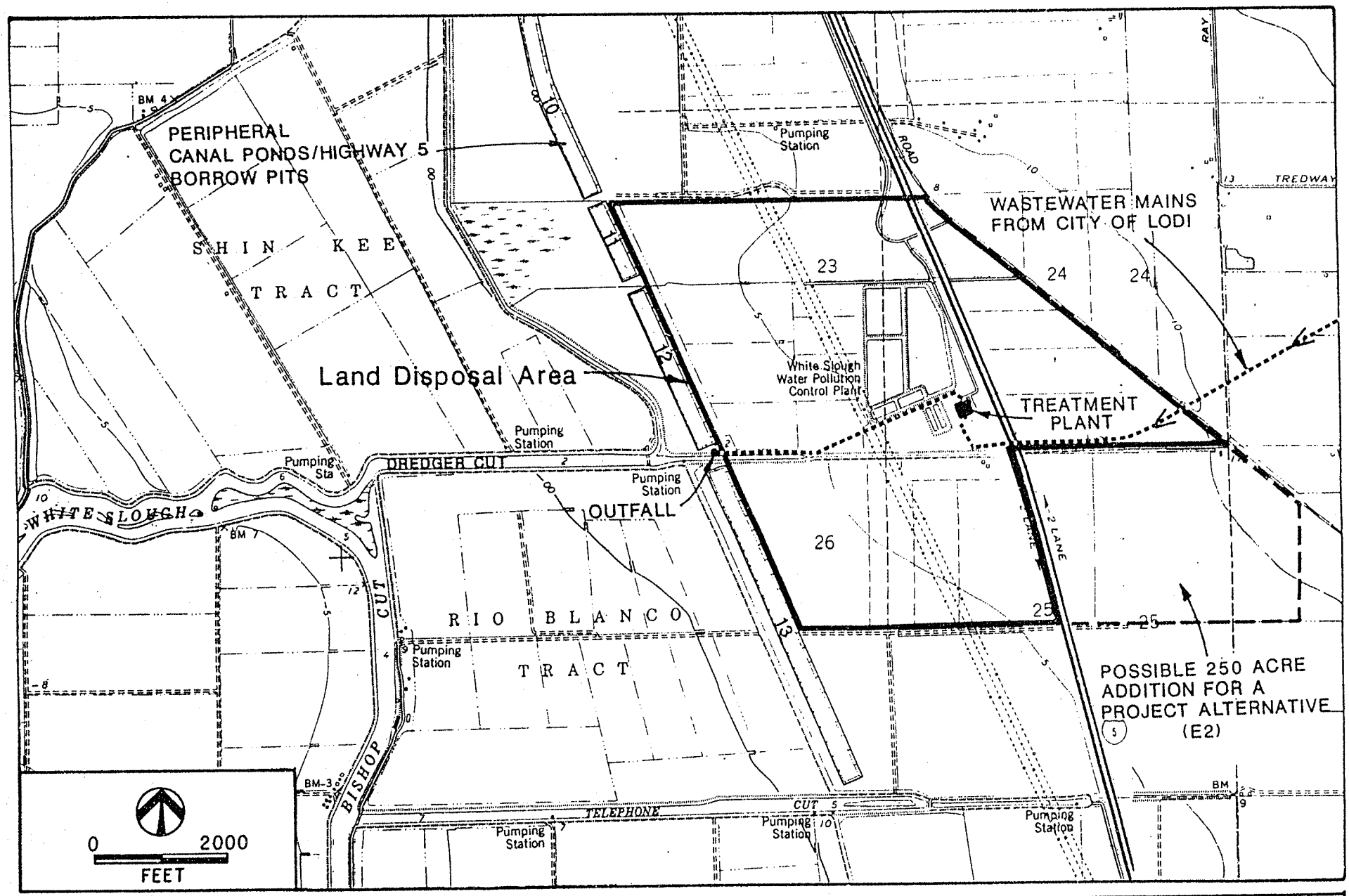


FIGURE 3-2. WHITE SLOUGH WATER POLLUTION FACILITY - SITE PLAN AND VICINITY

Base Map: USGS 7.5' "Terminous" and "Lodi South" quadrangles

The site also lies within a major transportation and utility corridor connecting northern and southern California. Both I-5 and three major power transmission lines pass through the facility (Figure 3-2).

Lying at the edge of the Delta, the WPCF is adjacent to marsh and aquatic habitats important to both migratory birds and resident fish and wildlife. Ponds of the discontinued peripheral canal project, dredged cuts connecting sloughs of the San Joaquin River, irrigation canals, and a tidal marsh all lie immediateiy west of the facility (Figure 3-2).

Existing Wastewater Facilities

Overview

The existing WPCF consists of an activated sludge system presently having approximately 6.2-MGD capacity for domestic wastes, and an aerated lagoon and storage pond system of 3.75-MSD capacity for industrial waste. Industrial effluent and a portion of the treated domestic effluent (28 percent, between 1983 and 1986) are used for irrigation of an adjacent 655 acres of city-owned agricultural land [Figure 3-2). The remaining treated domestic effluent is discharged to Dredger Cut, a waterway connecting to White Slough (Figure 3-2). Waste methane gases from the treatment process are used for space and digester heating or flared at the plant site.

Industrial System

The City of Lodi maintains an industrial wastewater collection system separate from the domestic collection system. The industrial system primarily collects wastewater from Pacific Coast Producer's (fruit and vegetable canning), and also from Mason Fruit Company (cherry brining) and Valley Industries (tow bar manufacture). The General Mills plant wastewater, however, is discharged into the domestic system.

Current industrial wastewater flows peak at near the system capacity of 3.75 MGD in August (the peak canning season), but for about one-half of the year the flows average less than 0.15 MGD. The average total annual flow is nearly 300 MG. Because expansion of the Pacific Coast Producer's cannery appears unlikely, the city's industrial system is considered sufficient for the foreseeable future (Black & Veatch 1987b).

Industrial flows pass through the WPCF without treatment. All of the effluent is disposed of by irrigation on city-owned agricultural lands in summer, with storage of winter flows in earthen ponds at the plant site.

Domestic System

Collection. Wastewater flows from virtually all residential and commercial developments within the city, as well as industrial flows from General Mills and some smaller industrial developments, are collected in the domestic

system. No developments outside of the city are served, and a city ordinance does not allow such service.

Flows in the domestic system are much more constant than in the industrial system. The winter 1987/1988 flow is about 5.9 MGD, or about 95 percent of the plant capacity of 6.2 MGD. The capacity of the plant was recently increased from 5.8 MGD by improvement of the aeration system and installation of a more efficient fine bubble diffuser unit. Monthly flows vary on the order of 0.1 to 0.2 MGD frcm the annual average, and no significant infiltration from groundwater is known to occur (Forkas pers. comm.).

Treatment. Preliminary treatment of the domestic wastewater is accomplished by comminutors and detritors. Primary treatment consists of three rectangular clarifiers. Secondary treatment facilities consist of three activated sludge aeration basins with a fine bubble aeration system, and five rectangular secondary clarifiers. The aeration system is driven by three rotary blowers. The treated effluent is then disinfected through chlorine contact tanks and dechlorinated prior to surface water discharge.

Filamentous sludge bulking, poor settling, and poor hydraulics in the rectanguiar clarifiers have been the primary contributors to the plant's inability to consistently produce an effluent meeting the quality requirements established via a NPDES permit from the RWQCB (Appendix D).

Effluent Disposal

Untreated wastewater from the industria! system and treated domestic system flows are stored in earthen holding ponds having a 120-MG capacity (Figure 3-3). Treated domestic effluent is either diverted (or stored) for irrigation of city-owned agricultural fields (Figure 3-4) or conveyed via a 3,500 foot, 48-inch diameter pipe to an outfall in Dredger Cut, a waterway connecting to White Slough.

The current policy for choice of effluent disposal has been established by the WPCF operations staff in conformance with requirements of the current NPDES permit as follows:

- All industrial wastewater is used for agricultural irrigation. During the irrigation season, industrial effluent is conveyed directly to irrigation. Otherwise, flow is diverted to storage until the following irrigation season.

- Domestic effluent is diverted to or stored for irrigation when any one of the following conditions exists:

  - The irrigation flow demand from the city's 655-acre croplands exceeds the industrial wastewater supply.

  - The dissolved oxygen concentration in White Slough or Bishop Cut is less than 5 mg/l, based on daily monitoring.

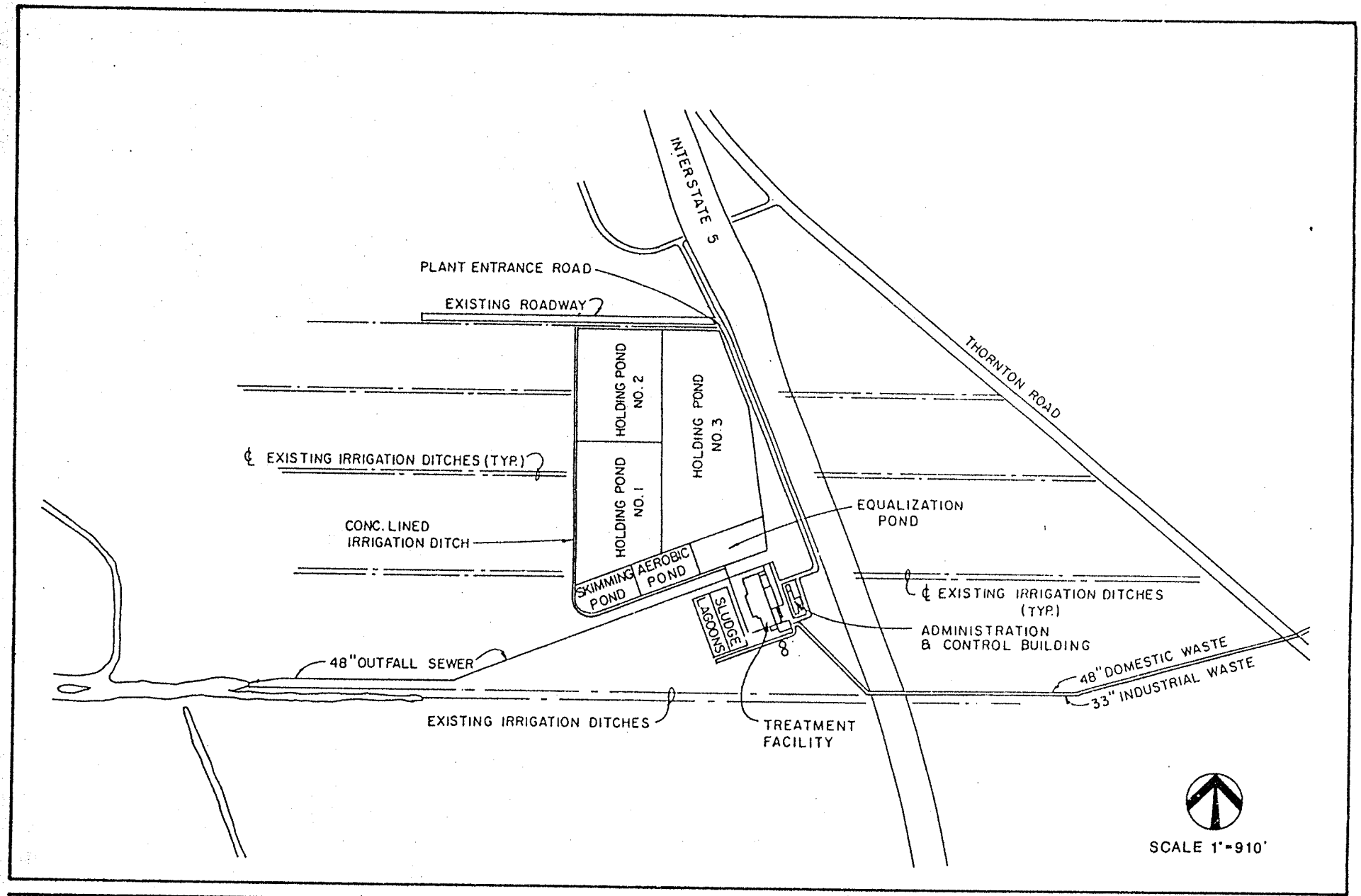


FIGURE 3-3. WHITE SLOUGH WATER POLLUTION CONTROL FACILITIES

Source: Black & Veatch 1987b

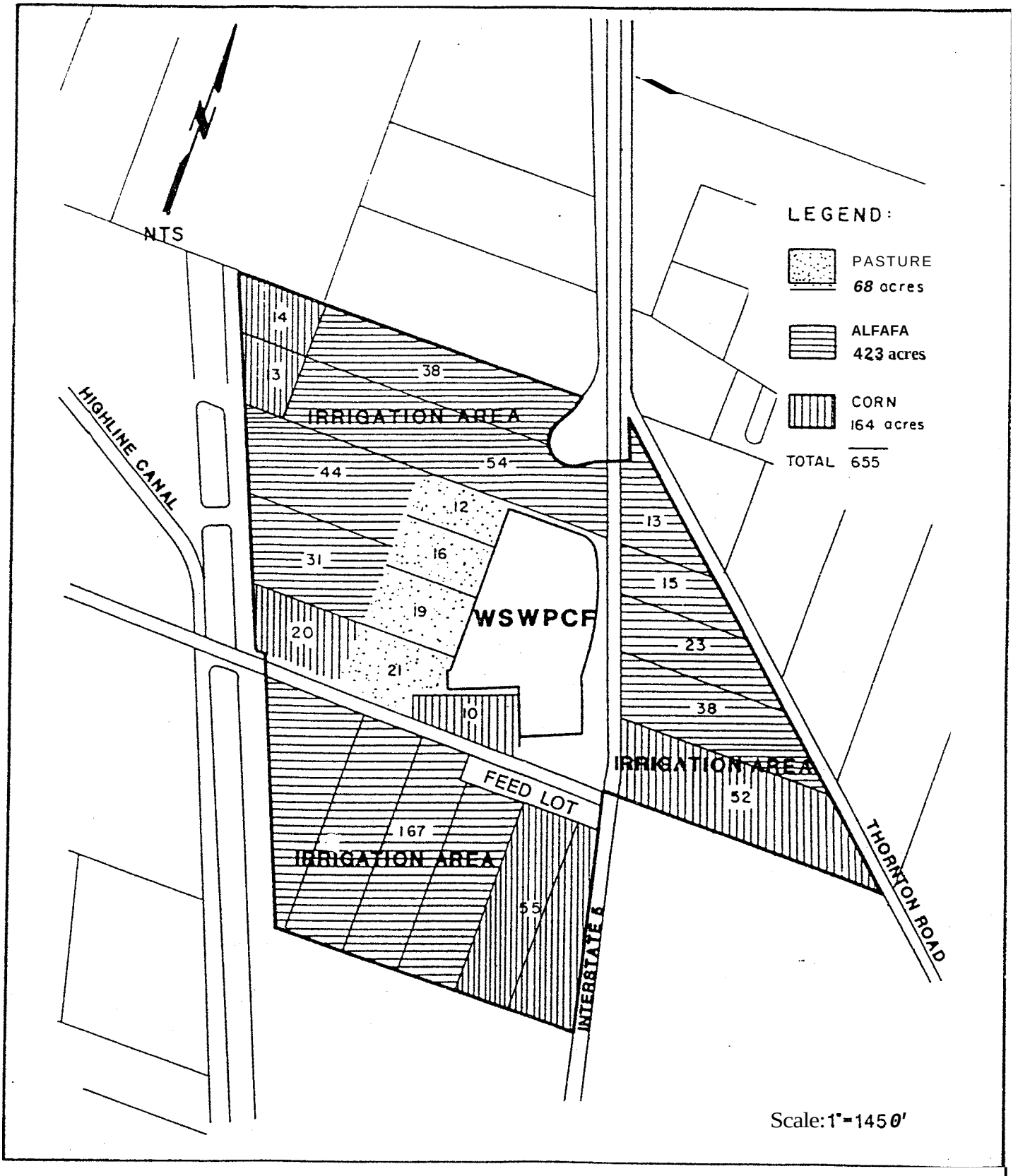


FIGURE 3–4. IRRIGATION FIELDS AND CROP CONFIGURATION 1987

Source: Black & Veatch 1987b

- High concentrations of organics or dye in the domestic influent result in inadequate treatment.

- Sludge bulking and poor clarifier performance result in inadequate separation of solids from the effluent.

- Other **NPDES** permit requirements cannot be met.

Inadequate treatment or separation of solids is usually indicated by monthly average effluent concentrations of biochemical oxygen demand (BOD) or total suspended matter (TSM) exceeding the **NPDES** permit limits of 20 mg/l each in late summer or 30 mg/l each during the remainder of the year, or by weekly or daily concentrations exceeding corresponding limits (Table 3-1). Diversion of domestic effluent to irrigation due to effluent or receiving water quality problems has been occurring an average of approximately 3 days per month.

The wastewater irrigation area, shown in Figure 3-4, *is* currently used for the production of alfalfa, corn, and pasture grasses. From 1983 to 1986, an annual average of 756 MG were applied to this acreage, although the irrigation capacity has recently been estimated to be 817 **MG** (Black & Veatch 1987b). The capacity is limited by storage pond capacity and irrigation water demand. This irrigation capacity is sufficient for land disposal of all of the current industrial system flow (300 **MG)** plus 24 percent of the current domestic system flow (25 percent of 2,190 MG) on an annual basis. To bring actual irrigation application up to capacity, however, several identified improvements to the effluent irrigation conveyance system need to be made.

Sludge Disposal

Currently, primary sludge is thickened in primary sedimentation tanks, and sludge from the secondary treatment facilities is thickened by dissolved air flotation. Both sludges are digested in anaerobic digesters and then stored in two sludge lagoons. The lagoons are intended to accomplish minor sludge dewatering, and the sludge is to be periodically removed for use on local agricultural land.

Sludge has not been removed from the lagoons for several years, however. The sludge in the lagoons currently overflows into the industriaf wastewater influent channel. Combining with the industrial wastewater **flow,** the sludge flows with the effluent to the agricultural fields, or the irrigation storage ponds.

Proposed **WPCF** Expansion

Overview

The proposed project is the expansion through system improvements of the White Slough **WPCF** domestic system capacity to 8.5 MGD, an increase of

Table 3-1. Existing Effluent Limitations for Surface Water Discharge.

Constituents	Units	Monthly Average	Weekly Average	Monthly Median	Daily Maximum
July 1 through October 31:					
BOD[a]	mg/l	20[b]	40[b]	--	50[b]
	lbs/day	967[b]	1,935[b]	--	2,419[b]
TSM	mg/l	20[b]	40[b]	--	50[b]
	lbs/day	967[b]	1,935[b]	--	2,419[b]
Settleable matter	ml/l	--	--	--	0.1
Chlorine residual	mg/l	--	--	--	0.1
Total coliform organisms	MPN/100 ml	--	--	23	500
Oil and grease	mg/l	10[b]	--	--	15[b]
	lbs/day	484[b]	--	--	726[b]
November 1 through June 30:					
BOD[a]	mg/l	30[b]	45[b]	--	50[b]
	lbs/day	1,451[b]	2,177[b]	--	2,419[b]
TSM	mg/l	30[b]	45[b]	--	50[b]
	lbs/day	1,451[b]	2,177[b]	--	2,419[b]
Settleable matter	ml/l	--	--	--	0.1
Chlorine residual	mg/l	--	--	--	0.1
Total coliform organisms	MPN/100 ml	--	--	23	500
Oil and grease	mg/l	10[b]	--	--	15[b]
	lbs/day	484[b]	--	--	726[b]

Notes:

[a] 5-day, 20°C BOD.

[b] Based upon a design treatment capacity of 5.8 MGD.

Source: NPDES Permit No. CA0079243, CVRWQCB, Order No. 86-041, February 28, 1986.

2.3 MGD (36 percent). Through irrigation system improvements, maximum use would be made of the existing city-owned agricultural lands for disposal of all industrial wastewater and as much treated domestic effluent as possible. On an annual average daily basis, about 1.5 MGD of the domestic system flow could be disposed of on the existing agricultural lands. The remaining domestic system flow (ultimately 7.0 MGD on an annual average daily basis) would be reieased after treatment to Delta waters at the current outfall in Dredger Cut, The wastewater treatment would be modified, however, to significantly improve the quality of this effluent, as described under "Planned Quality of Discharged Effluent" below.

The proposed project also includes system improvements to retain sludge in the sludge storage lagoons during the non-irrigation season and to pump sludge directly to the irrigation channel during periods of flood irrigation of the city's agricultural lands. An analysis of nitrogen cycling indicates that this mode of sludge disposal, together with effluent disposal up to the site's irrigation capacity, can continue to be accommodated on the city's acreage at least until another plant expansion [beyond 8.5 MGD) is needed (Black & Veatch 1987a). Supplemental acreage would then be needed.

Finally, the project includes the installation of a 250-kilowatt generator to produce power from combustion of the digester gases.

Treatment and Disposal System Improvements

The proposed project entails replacement of existing rectangular secondary clarifiers (sedimentation basins) with two circular secondary clarifiers, and conversion of the existing clarifiers to chlorine contact tanks. The new clarifiers, each with a diameter of 100 feet and depth of 15 feet, would be located within the existing facility [Figure 3-5). Two new primary clarifiers and an aeration basin would also be constructed.

To improve handling and disposal of liquid digested sludge, sludge storage lagoons would be expanded and modified and piping and pumping irnprovemenrs would be made to allow direct sludge discharge from the lagoons into the irrigation channel when irrigation is underway. A new sludge digester, 50 feet in diameter and 80 feet in height, would also be constructed. To facilitate lagoon reconstruction and to retain the capacity of the city's lands to accept sludge in the future, the sludge currently stored onsite would be disposed of at the county's Harney Lane landfill site. To monitor effects of future sludge disposal, groundwater monitoring wells would be constructed on the city's irrigated lands.

Other treatment process improvements are proposed. These include headworks improvements, plant effluent box modifications, control building modifications, gravity belt thickener improvements, and upgrade of existing sludge digesters.

To approach full utilization of the irrigation capacity of the city's lands, current deficiencies in the wastewater irrigation conveyance system would be eliminated as follows:

- modification of existing irrigation pumps,

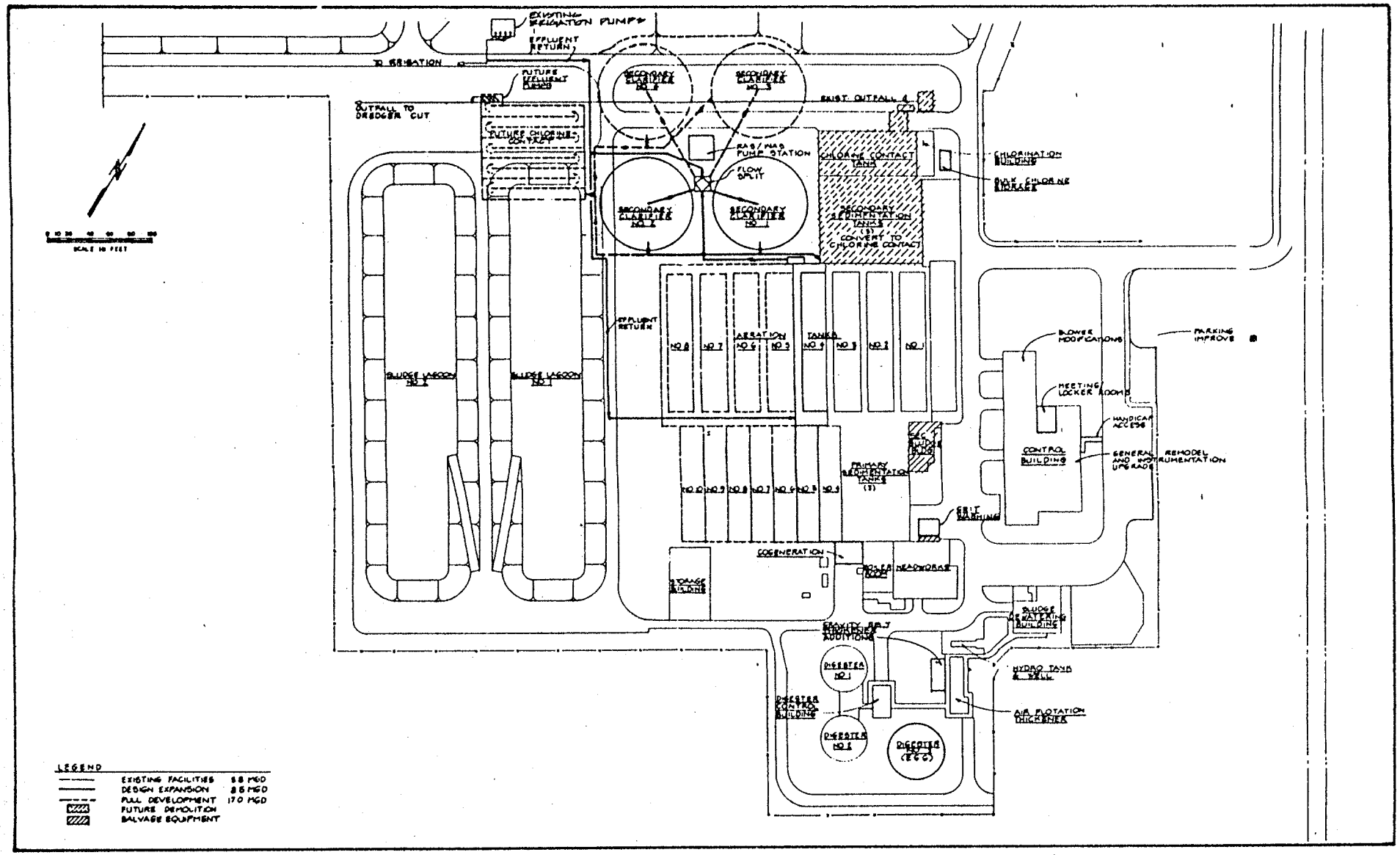


FIGURE 3-5. SITE PLAN, WPCF EXPANSION

Source: Black & Veatch 1987b

- provision of a standby tailwater pumping capacity,
- enlargement of a concrete distribution ditch capacity, where inadequate (400 feet prior to 1-5 and along Thornton Road),
- protection of diversion structures along the ditch from erosion,
- diversion of flows in adjacent county road drainage ditches away from the system's irrigation runoff return system that recycles to the effluent storage ponds, and
- lining of a long feeder ditch supplying the fields north and west of the ponds.

Planned Quality of Discharged Effluent

Installation of the proposed clarifiers and other components, in conjunction with aeration system improvements recently completed, would allow the WPCF to produce domestic effluent having 10 mg/l or less BOD and suspended solids more than 90 percent of the time ("10/10 treatment"). Thus, although the total wastewater flow would increase, a higher effluent quality would be produced than is currently required, and degradation of surface waters should be reduced. When treated domestic effluent failed to meet the NPES permit requirements, it would continue to be diverted to or stored for irrigation. The current policy for effluent disposal described earlier would continue to govern WPCF operations.

Proposed Project Costs

Total project costs are estimated to be $8.1 million (Fiorucci pers. comm.). Operation and maintenance costs would be expected to increase 20-35 percent over the current situation (Forkas pers. comm.).

Chapter 4

PROJECT ALTERNATIVES

Introduction

As required by CEQA, alternatives to the proposed project that are capable of avoiding or reducing significant impacts of the proposed project must be formulated and examined. The impacts of those alternatives worthy of consideration in detail, together with impacts of the proposed project, are described in the next chapter.

The project engineers initially considered a wide range of alternatives:

- five secondary treatment improvement options,
- four effluent disposal options, and
- 13 sludge dewatering and disposal options (Black & Veatch 1987a, b).

Some of the initial alternatives have been eliminated from consideration of environmental impacts herein because they would substantially impede attainment of or fail to meet the project objective (described in Chapter 3). Other potential alternatives have been eliminated from detailed study because of extreme costs, rendering implementation remote and infeasible. Still others have been eliminated because they attain similar results as the proposed project but at higher cost. These aspects are discussed below.

Alternatives Eliminated From Further Study

No-Project

This alternative would require the cessation of Lodi's growth in the near future, since the remaining unused capacity of the WPCF is very small. (See "Growth-Inducing Impacts" in Chapter 5.) This alternative would fail to meet the project objectives of allowing some continuing growth of the city over the next 1-2 decades and of improving the quality of the discharged effluent.

One objective of the General Plan revision process is to allow consideration of a no-growth alternative for the City of Lodi. A growth moratorium would entail significant socioeconomic consequences to Lodi's citizens. Accordingly, the current general plan revision process includes evaluation of the impacts of a no-growth policy.

Postponed Project

This alternative would have the same effect as the No-Project Alternative in failing to meet the project objectives. Approximately 3 years are required from initiation of project impact analyses to actual project operation. In the present situation, the city's recent historical growth will have been curtailed for some period prior to project operation, even with no postponement. Thus, postponement would result in failure to meet the project objective through much of the ensuing decade.

Secondary Treatment Improvement Options

Of the four secondary treatment improvement options considered by the project engineers--effluent return, improved activated sludge, effluent filtration, and water hyacinth polishing--the proposed improved activated sludge system involves the least construction cost, greatest reliability, and least operation and maintenance cost. All options result in similar effluent quality and have similar environmental effects. Thus, the various options are not considered further herein because they offer no environmental benefits in comparison to the proposed project.

Effluent Disposal Alternatives

Two alternatives to the proposed effluent disposal plan are examined in detail in this report and are defined in the latter section of this chapter. Two other possible alternatives are eliminated from further study as follows:

Land Disposal of All Effluent. This alternative would entail disposal of all industrial and treated domestic effluent through agricultural irrigation. No discharge to surface waters would be needed. Treated domestic effluent would be stored in earthen ponds through the non-growing season, and the total annual effluent volume would be applied to adjacent agricultural fields from April through October. Accordingly, this alternative would fully respond to the CVRWQCB's stated intent in its Sacramento-San Joaquin Delta Basin Plan to "encourage the disposal of wastewater where practicable" by requiring evaluation of year-round or dry season land disposal (California State Water Resources Control Board and Regional Water Quality Control Board 1975a).

This alternative would require the acquisition of an additional 1,800 acres of agricultural land and construction of an 180-MG storage lagoon system, accompanied by expanded irrigation conveyance and runoff collection systems. The estimated construction cost would be approximately $13 million, or $5 million more than the cost of the proposed project (Black and Veatch 1987b, and Ewing pers. comm.).

Based on the extreme cost differential between this alternative and the proposed project, the City's financial ability to implement land disposal of all or even most effluent is extremely remote. The alternative is judged to be infeasible. An alternative (Alternative E2) involving a potentially feasible increase in land treatment is considered in detail, however.

Outfall Relocation. This alternative would involve relocating the treated effluent outfall from its current location at the terminus of Dredger Cut to a more through-flowing waterway such as White Slough or Bishop Cut.

If continued discharge of effluent to Dredger Cut would have adverse effects on affected Delta waterways, this alternative couid potentially reduce or avoid such effects. However, as concluded in the "Impacts of the Proposed Project, Surface Water Changes" section of Chapter 5, the proposed project would not result in a significant adverse effect on Delta waterways. Thus, this afternative is not Considered further herein because it offers no environmental benefit in comparison to the proposed project.

Sludge Disposal Alternatives

The 13 sludge dewatering and disposal options considered by the project engineers can be combined into three primary alternatives to the proposed project for purposes of impact evaluation. Land application of liquid digested sludge by flood irrigation is the proposed method. One of the other methods, land application of sludge by mechanical spreading, is considered in detail in this report because it provides greater certainty in achieving land application at agronomic rates. Other possible alternatives are not considered further because they would provide no environmental benefit in comparison to the proposed method or the identified alternative.

Sludge Disposal at a Landfill Site. This sludge disposal alternative would involve air drying of sludge in the lagoons to at least a 50 percent solids component and hauling it to San Joaquin County's Harney Lane landfill. This Class III solid waste disposal site is east of Highway 99 about 20 miles from the WPCF.

The cost of landfill disposal in terms of present worth is nearly twice the cost of the proposed sludge disposal (Black & Veatch 1987a). During unexpected periods of heavy metal build-up in the sludge, if any, this alternative would be preferable to the proposed sludge disposal plan of land spreading for agricultural use.

The buildup of heavy metals in sludge is not expected to occur at the WPCF (Black & Veatch 1987a). The city requires pretreatment of industrial wastes to avoid such a situation. Accordingly, this alternative is not considered in detail because it does not avoid or reduce an expected significant effect of the proposed project and foregoes the opportunity for resource utilization. However, the occasional landfilling of sludge when high concentrations of heavy metals are detected is recommended in Chapter 5 as a mitigation measure to accompany the proposed method of sludge disposal.

Sludge Composting. This alternative would involve sludge dewatering and aerated window composting adjacent to the existing sludge lagoons. Wood chips would be added as an amendment. The stabilized humus-like product would then be marketed as a soil amendment.

This method of sludge disposal would tend to generate more odors than the proposed method and would provide no benefits in terms of minimizing the potential for contamination of surface runoff or groundwater. The cost

of this alternative in terms of present worth is nearly 4.5 times the cost of the proposed method.

This alternative is dismissed from further consideration because it does not avoid or reduce a potentially significant effect of the proposed project and yet entails significantly higher cost.

Alternatives Considered in Detail

Together with the proposed project, one sludge and two effluent disposal alternatives are evaluated in detail in this document. The sludge disposal alternative could be used in conjunction with the proposed or alternative effluent disposal schemes. These alternatives are selected based on engineering studies revealing their potential feasibility in terms of technical and cost aspects (Black & Veatch 1987a, b), and because they have the potential to reduce potentially significant environmental or eventual cost impacts of the proposed project.

Alternative El : Effluent Discharae Priority

This alternative entails the same domestic effluent treatment improvements and sludge disposal method as the proposed project, except that treated effluent would only be diverted to irrigation or irrigation storage when the design treatment standards (10/10 treatment) and established receiving water standards are not met. The expected frequency of such diversion is two days per month.

Since the disposal capacity of the city's existing agricultural lands would not be fully utilized on an annual basis, the buildup of heavy metals in the soils would be slowed appreciably. This would allow the site to be used for effluent and sludge disposal well into the future during additional WPCF expansions, should they occur.

The construction cost of this alternative would be the same as for the proposed project. Operation and maintenance costs would be somewhat less than those of the proposed project. As noted, land acquisitions costs in future decades would probably be avoided.

Alternative E2 : Expanded Irrigation

This alternative also entails the same domestic effluent treatment improvements (10/10 treatment) and sludge disposal method of the proposed project. However, it involves expansion of the city's agricultural irrigation acreage for disposal of domestic effluent and sludge in proportion to the increase in design treatment capacity (from the pre-1987 design capacity of 5.8 MGD to the proposed 8.5 MGD). The past ratio of 113 acres per 1-MGD treatment capacity would be maintained. Thus, in addition to land disposal of all industrial wastewater, this alternative would allow land disposai of 42 percent of the current domestic wastewater flow, decreasing to 30 percent of the domestic flow when the flow reaches the expanded capacity (8.5 MGD).

The additional effluent irrigation land required would be 305 acres, contiguous to the city's existing irrigated lands. The 250 acre adjacent ownership to the southeast (Figure 3-4) could be utilized for most of this expansion. The suitability of this and other adjacent lands to serve effluent and sludge disposal functions is assessed under "Soils" and "Land Use" in Chapter 5.

The construction cost of this alternative ($8.9 million) would be 10 percent more than the cost of the proposed project. The benefit would be increased resource recovery because additional wastewater nitrcgen and other nutrients would be utilized for the production of agricultural crops.

Alternative S: Land Application of Sludge by Mechanical Spreading

This alternative would involve various methods and degrees of dewatering the sludge, followed by truck transport to nearby agricultural lands for use as fertilizer. Candidate lands are shown in Figure 4-1 and are evaluated for suitability in the "Soils" and "Land Use" sections of Chapter 5. The sludge may be spread on the surface and plowed or disced into the soil, or injected in liquid form beneath the soil surface.

This alternative offers both some potential benefits and drawbacks in comparison to the proposed project. Adherence to an application rate at the agronomic rate would be potentially achievable with more certainty than that offered by the flood irrigation application method. On the other hand, the city would incur costs for sludge hauling and improving fields for runoff control.

This alternative, when using the least-cost dewatering options, would cost 2.1-2.7 times the cost of the sludge management of the proposed project (the highest cost is for subsurface injection), in terms of present worth.

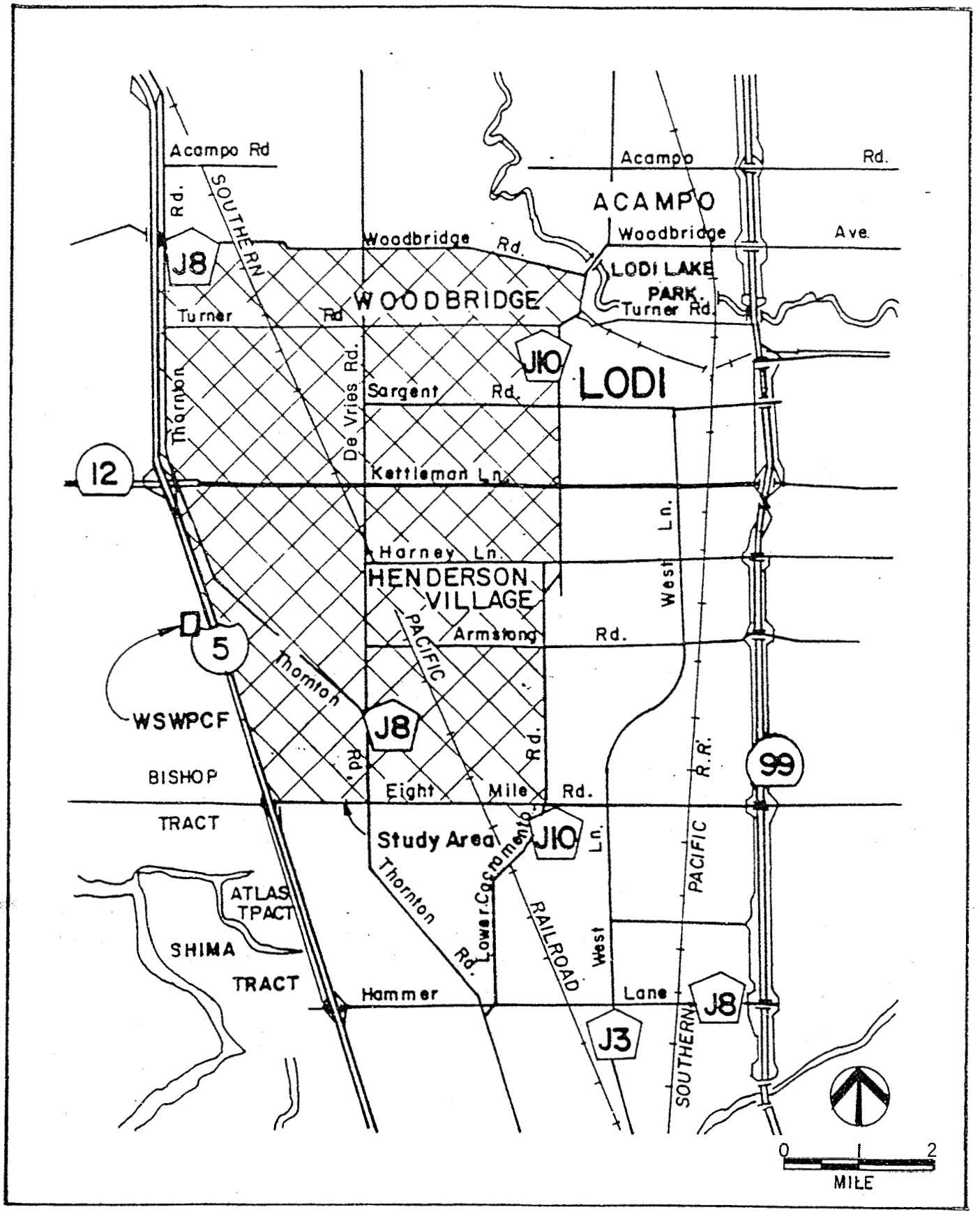


FIGURE 4–1. SLUDGE DISPOSAL STUDY **AREA**

Source: Black & Veatch 1987a

Chapter 5

ENVIRONMENTAL SETTING, DIRECT IMPACTS, AND MITIGATION MEASURES

introduction

This chapter is a detailed analysis of the environment that could be affected by the project, anticipated direct project impacts at or near the project site, potential mitigation measures, and impact reductions afforded by the project alternatives considered in detail (Chapter 4). Where cumulative impacts may occur, they are described.

The chapter is arranged by resource as shown in the table of contents. For each resource, the resource setting is described, and anticipated or potential direct impacts are formulated. A judgment is made whether each impact will be significant or less than significant. For each significant impact, mitigation measures are described. The ability of each mitigation measure to reduce the impact to less than significance is examined. Impacts found unmitigable to less than significance are called "unavoidable." However, the project alternatives described in Chapter 4 are then examined to determine if the unavoidable significant impacts of the proposed project can be avoided by implementing a project alternative instead. Finally, the alternatives are examined to see if they cause other significant impacts.

The results of this analysis, including the classification of impact significance, feasible mitigation measures, benefits offered by the alternatives, and identification of the environmentally superior alternative, are presented in Chapter 2 of this report.

Because the WPCF expansion would allow a substantial increment of growth and development of the city, and possibly of some neighboring sites within the county, the project also may be considered to have potentially significant "growth-inducing impacts." These are discussed separately in the next chapter.

Soils

Setting

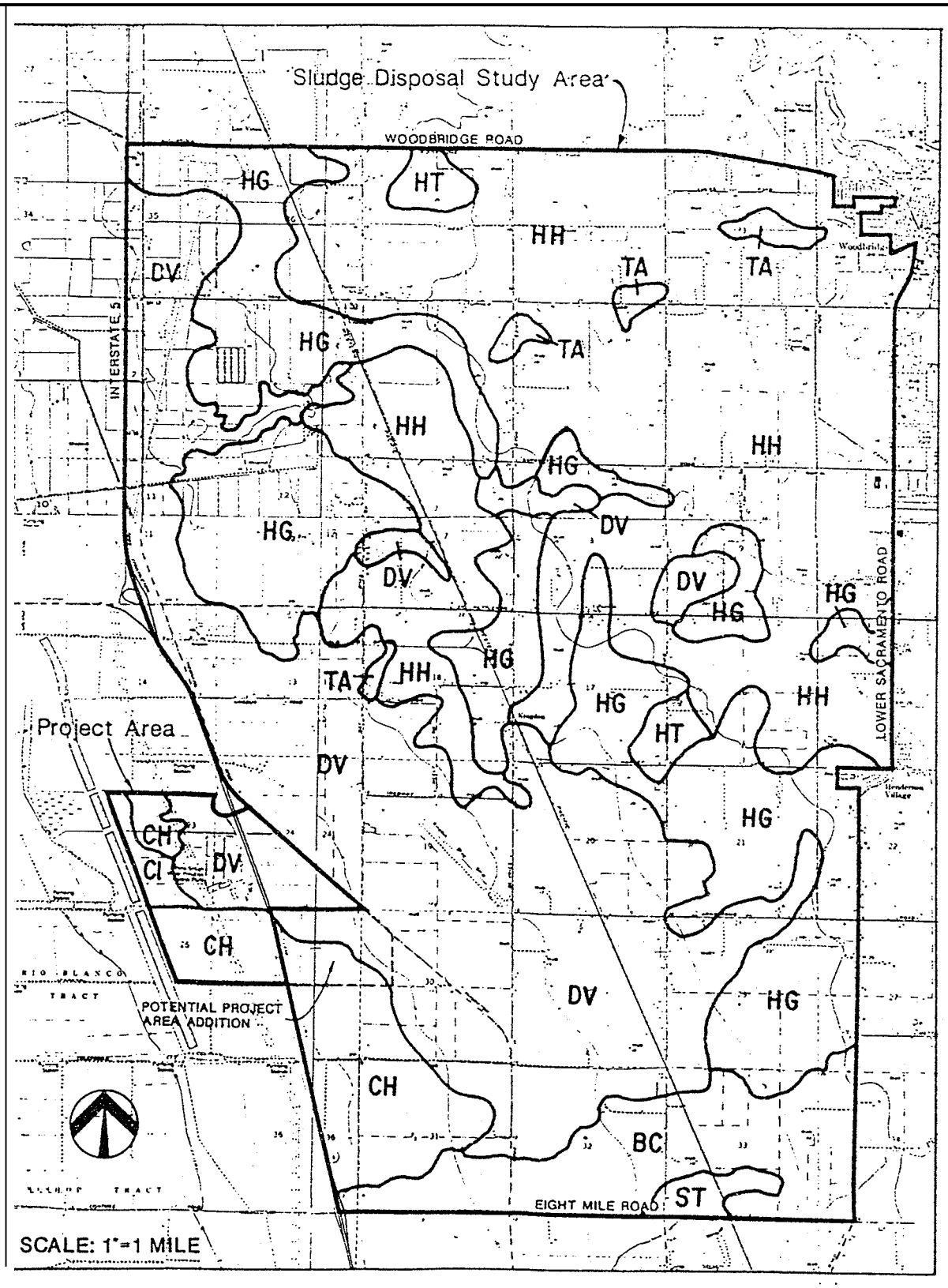
Project Site. Soils at the project site are nearly equally divided between clay loams and sandy loams (Guard clay loam and Devries sandy loam) (U. S. Soil Conservation Service 1987). The characteristics, capabilities, and constraints for use are summarized in Table 5-1. Their distribution is shown in Figure 5-1, which also includes soils throughout the sludge disposal study area considered under a project alternative.

Table 5-1. Characteristics of Soils in the Disposal Study Area

Map Symbol[a]	Soil	Permeability, Slowest Horizon in/hr	Permeability, Slowest Horizon Obrcrfptor	Depth to Hardpan (in)	Depth to High Water Table[b] (ft)	Drainage	Soil Reaction of Topsoil (pH)	Hydrologic Soil Group[c]	Shrink-Swell Potential Descriptor	Shrink-Swell Potential Depth Range of "High"	Wind Erosion Hazard[d]	Capability Class[e] Irrigated/ Nonirrigated	Typical Use	Cation Exchange Capacity (meq[f]/100 g)	Available Water Capacity[g] (in)	Suitable Irrigation Methods
BC	Rioblanco clay loam	0.2-0.6	moderately slow	20-40	6	somewhat poorly drained	7.4-8.4	C	moderate	--	--	III/IV	irrigated crops	15	5.6-7.1	furrow, border. corrugation, sprinkler
CH[h]	hard clay loam, partially drained	0.06-0.2	slow	--	5-6, Jan-Dec	poorly drained	7.9-8.4	C	moderate	--	8	II/IV	irrigated crops	15	10.1-12.2	regulated irrigation so water does not stand at the surface
CI[h]	Guard clay loam	0.06-0.2	slow	weakly cemented below 15	1.5-3, Jan-Dcc	poorly drained	7.9 -8.4	C	moderate	--	8	III/IV	irrigated crops	7	10.1-12.2	regulated irrigation, so water does not stand at the surface
DV[h]	Derries randy loam, dralned	2.0-6.0	moderately rspld	28 (20-40)	5-6, Jan-Dec	somewhat poorly drained	6.8-8.4	C	low	--	moderate	IV/IV	irrigated crops, pastureland	15	2.9-3.8	furrow, border, corrugation, sprinkler
HC	Tokay fine sandy loam, hardpan substratum	2.0-6.0	moderately rapid	40-60	6	moderately well drained	6.1-7.8	B	low	--	moderate	II/IV	Irrigated crops, orchards, vineyards	5-15	4.9-6.4	furrow, border, corrugation, sprinkler
HH	Tokay fine randy loam	2.0-6.0	moderately rspld	60-99	5-6, Dec-Mar	well dralned	5.1 -7.8	B	low	--	moderate	II/IV	irrigated crops, orchards, vineyards	5-15	8.6-10.7	furrow, border, corrugation, sprinkler
HT	Kingdon fine randy loam	0.6-2.0	moderate	60-99	5-6, Doc-Mar	moderately well drafned	5.6-7.3	B	low	--	moderate	I/IV	irrigated crops, orchards, vineyards	5-15	8.3-10.6	furrow, border, sprinkler
ST	Jacktone clay	0.06-0.2	slow	20-40	5-6, Jan-Apr	somewhat poorly dralned	6.6-8.4	D	high	0-37 in	8	III/IV	irrigated crops, orchards, vineyards	5-15	5.2-6.1	furrow, border, corrugdtion, sprinkler
TA	Tjunga loamy sand	6.0-20.0	rapid	--	6	excessively drained	6.1-7.3	A	low	--	severe	VII/VI	irrigated orchards	5-15	3.0-5 .2	sprinkler

Motet: [a] See Figure ___.
[b] After heavy rain or irrigation, perched water table may occur over a hardpan, If present) see prior column.
[c] A = hlgh filtration rate, low runoff potential.
B = moderate infiltration rate, moderately low runoff potential.
C = low inffltratlon rate, moderately hlgh runoff potential.
D = very low Inffltratlon rate, hlgh runoff potential,
[d] All soils slope less than 2% and have slight water erosion hazard.
[e] Classes I-IV arc considered arable; Classes I-II are considered prime.
[f] "meq" = milliequivalents
[g] Total water in the roil profile available to plants when soil is at field capacity.
[h] Soils present at the current and potentlrl effluent dlrposal site.

Source: USDA Soil Conservation Service 1987. Preliminary data from soil survey of Sen Joaquin County, except cation exchange capacity estimates by Black & Veatch (1987s).



Refer to Table 5–1 for interpretation of soil symbols

FIGURE 5–1. SOILS **OF** THE PROJECT **AREA AND** SLUDGE DISPOSAL STUDY **AREA**

Source: U.S. Soil Conservation service 1987

The project site soils vary in productivity' from prime to fair. The clay loams are class 11-111 soils, while the sandy loams are class IV soils. The Sandy loams have a moderately rapid permeability with low water holding capacity (3-4"), while the more productive clay loams have slow permeability and high water holding capacity (10-12"). The sandy loams therefore require irrigation with approximately one-third as much water approximztely three times more frequently than the clay loams to maintain optimum production. All of the soils have a relatively high cation exchange capacity.

The groundwater in all of these soils is located at depths shallower than 6 feet in winter and below 6 feet during the irrigation season. The westernmost clay loams experience groundwater as shallow as 1.5-3 feet in winter on the average (U. S. Soil Conservation Service 1987) and are completely saturated during periodic flood events [Federal Energy Management Agency 1986). All of the soils have a moderately high rate of surface runoff during storms.

Because the project site soils have been used for combined sludge and effluent disposal for several years, their heavy metal concentrations may have increased. However, recent tests at sites shown in Figure 5-2 do not show significant concentrations [Table 5-2).

Sludge Disposal Study Area for Alternative S. As also shown in Figure 5-1 and described in Tabfe 5-1, soils in the area between 1-5 and Lodi are predominantly sandy loams. Clay loams, however, dominate the southern and western portions southeast of the project site. Small areas of sands and clays are also present.

About two-thirds of the soils are prime agricultural soils. The sand and clay deposits, the Devries sandy loam, and the Rioblanco clay loam soils are not prime soils (U. S. Soil Conservation Service 1987).

All of the soils in the study area, except those that are sands or clays, may be suitable for the application of sludge (Figure 5-3). The Tujunga loamy sand drains excessively fast into the water table. The Jacktone clay causes excessively high rates of surface runoff. These two soils exhibit characteristics that can lead to groundwater or surface water degradation, respectively.

Some of the more productive sandy loams, generally occurring in the northeastern one-half of the area, may not be suitable for sludge disposal (Figure 5-3). The determining factor, which must be determined on a site-specific basis in those areas, is whether soil pH is above or below 6.5. This criteria is intended to prevent excessive cadmium uptake from sludge into crops.

Impacts of the Proposed Project,

Continuing the practice of disposing of both effluent and sludge on the city's current fields and increasing the rate of application even a modest amount would eventually lead to the build-up of heavy metals in the soils, making their use for agriculture infeasible. As noted earlier, existing concentrations of heavy metals in the soils are low. An estimate prepared by

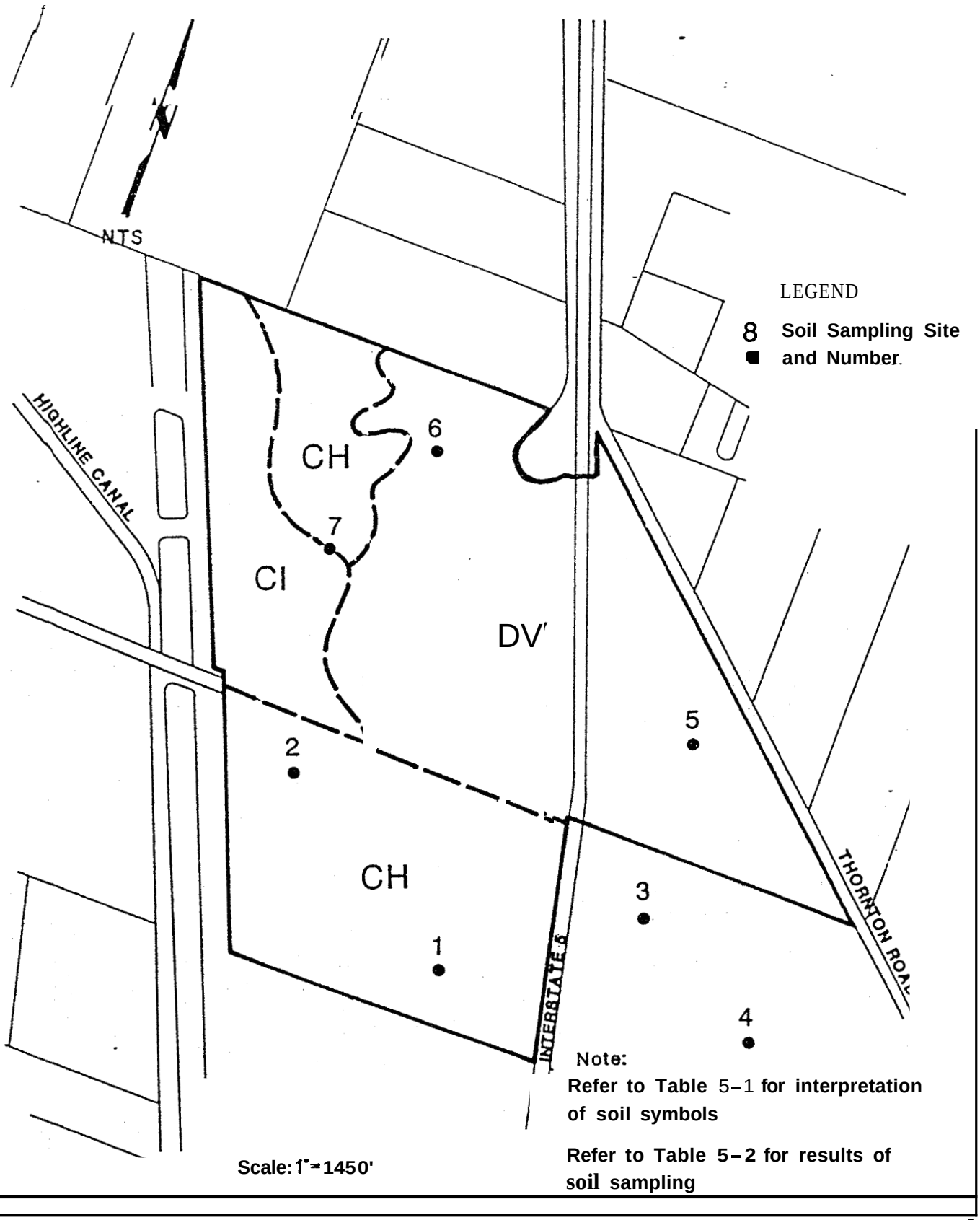


FIGURE 5-2. SOIL MONITORING SITES IN THE PROJECT **AREA**

Source: Black & Veatch 1987b

Table 5-2. Soil Test Data

Sample	pH	Zinc (mg/kg)	Cadmium (mg/kg)	Nickel (mg/kg)	Lead (mg/kg)	Copper (mg/kg)	Cation Exchange Capacity (meq/100g)
1	8.6	40	1	16	9.0	12	21.7
2	8.8	42	1	16	11	13	18.2
3	8.2	41	1	18	7.8	12	11.7
4	8.7	29	1	17	5.0	9.8	11.7
5	7.1	40	1	23	10	12	21.2
6	7.0	49	1	27	7.8	15	13.4
7	8.5	27	1	20	5.9	9.9	14.2
8	8.5	37	1	37	9.5	11	19.9

Source: Black & Veatch 1987a.

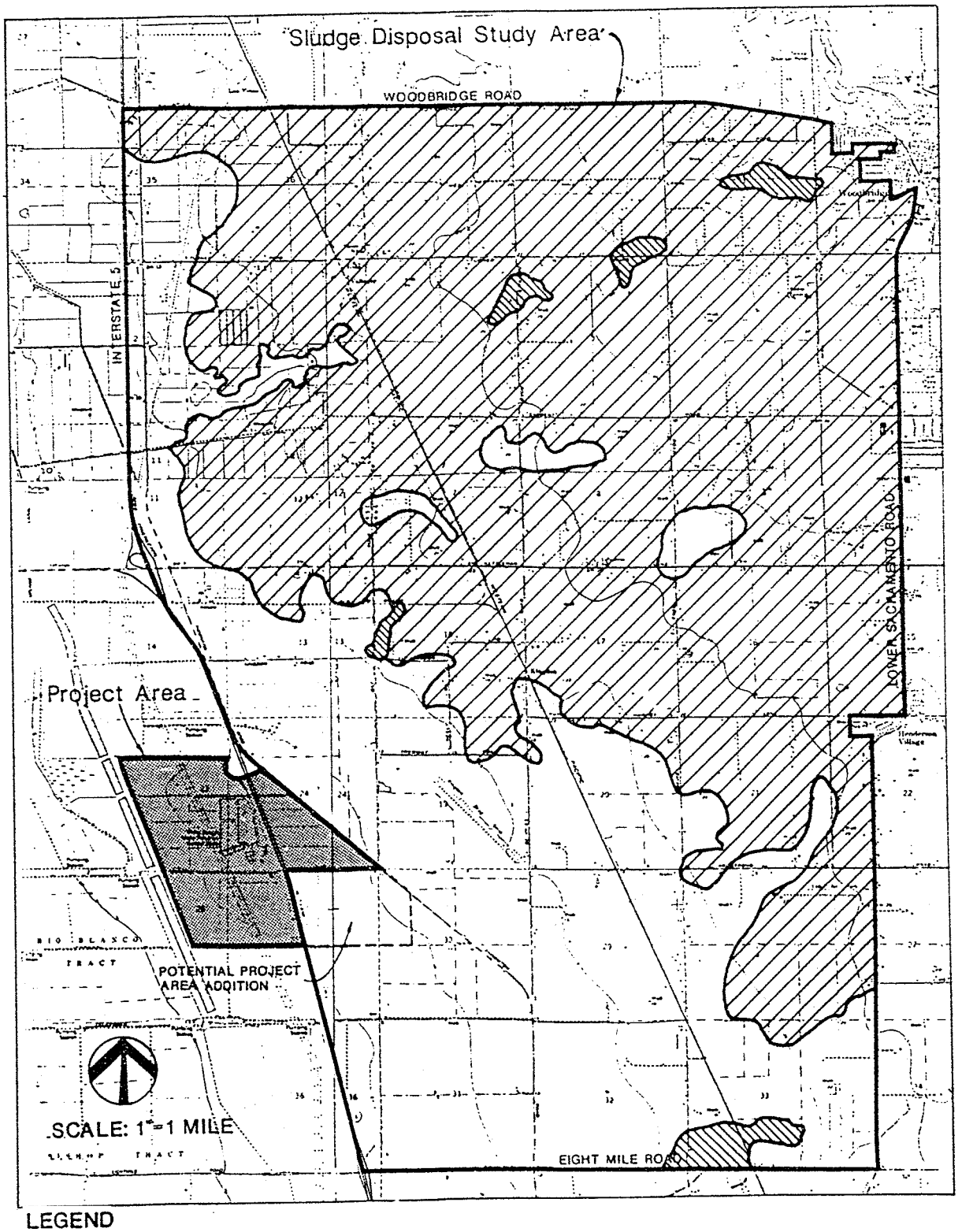


FIGURE 5-3. SOIL SUITABILITY OF STUDY AREA FOR SLUDGE DISPOSAL

Source of soil characteristics: U.S. Soil Conservation Service 1987

the project engineers indicates that heavy metals in the project site soils would not reach the DHS "maximum cumulative loading" for more than 100 years. Excessive zinc could then result, unless it were removed by pretreatment. if it were removed, the project site would be useful for more than 200 years. Nickel, lead, and cadmium would require at least several hundred years to reach excessive levels.

Though very slow, the increase in heavy metals in the site's soils is a significant cumulative effect. Once the maximum zinc (or other metal) concentration was reached, the site would be abandoned for its wastewater disposal use. The city would then have to acquire other private lands for disposal purposes. The project site would presumably lie fallow or be put to some specialized crop use at that time.

Mitigation Measures

The cumulatively significant build-up of heavy metals in the disposal area soils could be effectively mitigated by instituting a strict industrial wastewater pretreatment requirement, with an emphasis on zinc removal. The resulting very long lifespan of the soils for disposal would render this cumulative effect less than significant.

Impacts of the Project Alternatives

Significant impacts Reduced. Both Alternatives E1 and S would substantially reduce the rate of heavy metal build-up in site soils and have the benefit of extending the useability of the city's land application site practically indefinitely. The cumulative build-up of heavy metals in the site soils would therefore be considered less than significant.

Other Impacts Caused. Under Alternative E2, 50 percent more acreage would become subject to cumulative significant heavy metal build-up. This impact also could be effectively mitigated.

Alternative S can feasibly be implemented according to soil suitabilities in the sludge disposal study area as described earlier. Of the 20,500-acre area (Figure 5-3), about 40 percent, or 8,000 acres, is known to be suitable, and another 50 percent, or 10,000 acres, is potentially suitable. Since the actual acreage requirement is only 200-1,000 acres, depending on the crops grown, Alternative S can easily be implemented without utilizing unsuitable soils. Adverse water quality and public health effects would therefore be prevented.

Water Resources

Setting

Surface Waters in the Project Area

The Drainage Network. The WPCF is located on the eastern edge of the Sacramento-San Joaquin Delta (Delta) waterway system (Figure 5-4).

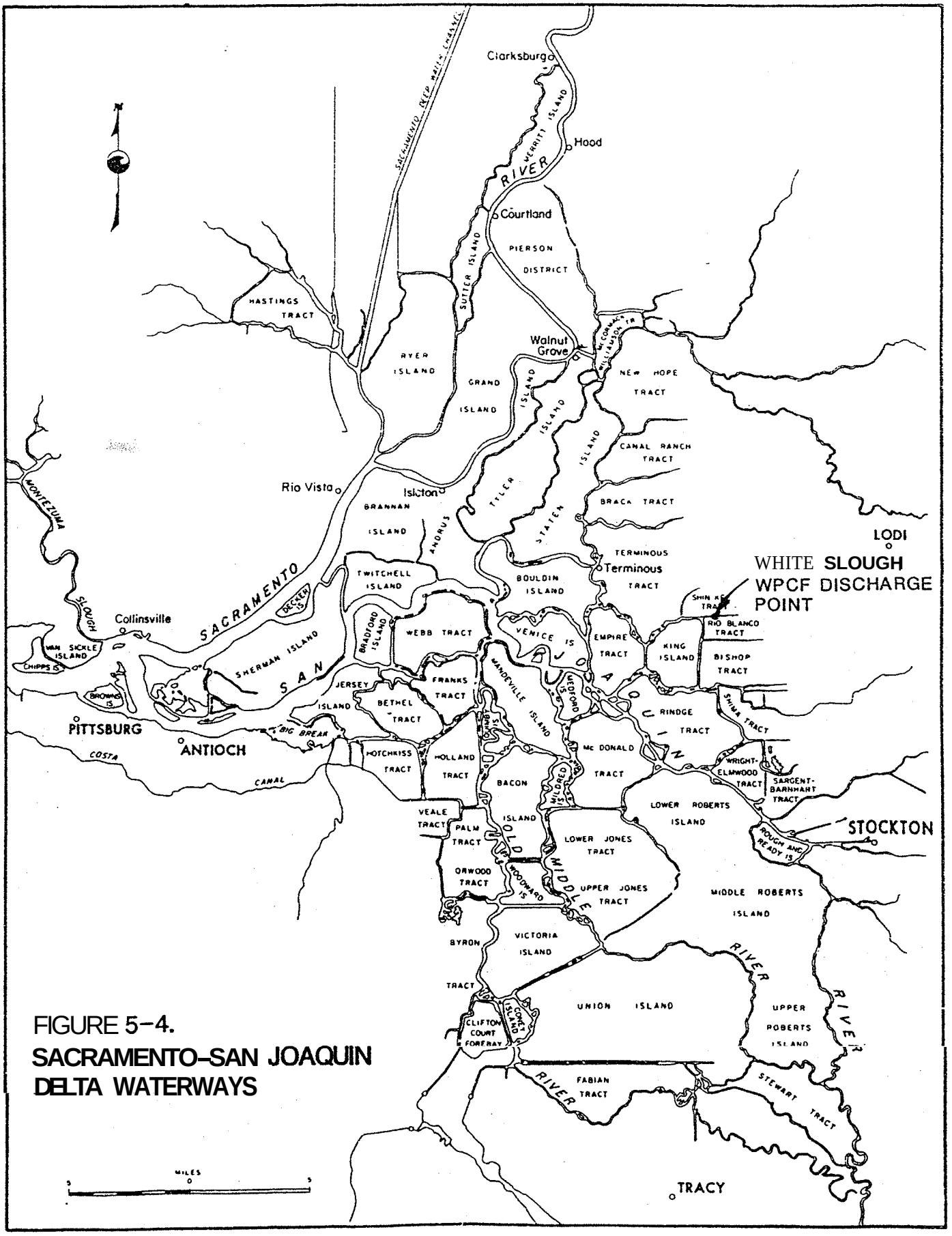


FIGURE 5-4.
SACRAMENTO–SAN JOAQUIN DELTA WATERWAYS

The sloughs and canals in this area generally drain southward and westward into the San Joaquin River, approximately 25 miles upstream from its confluence with the Sacramento River. Delta waterways in the area are tidal.

The WPCF discharges effluent into Dredger Cut, an east-west trending man-made channel that connects to both White Slough and Bishop Cut (Figure 5-5). These waterways, in turn, are connected to the San Joaquin River by Disappointment Slough, Fourteen Mile Slough, and Honker Cut, Dredger Cut receives surface runoff from agricultural lands to the north via Highline Canal. A series of ponds extending north and south of Dredger Cut do not have surface connections to Dreger Cut.

Beneficial Uses. The SWRCB established beneficial uses for the Delta as a whole in its Water Quality Control Plan for the Sacramento-San Joaquin Delta Basin in 1975 (California State Water Resources Control Board and California Regional Water Quality Control Board, Central Valley Region 1975a). Dredger Cut and the other waterways listed above are considered part of the Sacramento-San Joaquin Delta but are not listed in the Water Quality Control Plan Report as individual waterbodies with specific beneficial uses. Because beneficial uses can vary within the Delta, the RWQCB assigns uses on a case-by-case basis in this area. The Lodi White Slough WPCF waste discharge requirements designate that Dredger Cut, White Slough, Bishop Cut, and Delta waters have the following specific beneficial uses: municipal, industrial, and agricultural supply; recreation; aesthetic enjoyment; navigation; groundwater recharge; freshwater replenishment; and preservation and enhancement of fish, wildlife, and other aquatic resources (California Regional Water Quality Control Board, Central Valley Region 1986). The effluent quality limitations and receiving water quality requirements deemed necessary by the RWQCB to protect these beneficial uses are contained in Lodi's waste discharge requirements, which are included as Appendix D. Long-term water quality objectives established for Delta waters by the SWRCB are included in Appendix E.

Flows. No historic hydrologic monitoring data exists for Dredger Cut or the other Delta waterways in the immediate area of the White Slough WPCF. These waterways are located on the eastern fringes of the Delta and have relatively small, undefined watersheds. Diking, grading, and construction of drainage ditches for agriculture have significantly altered the natural drainage pattern in the area. Dredger Cut receives runoff from adjacent agricultural areas through at least three return drains (California Department of Water Resources 1987), Highline Canal, and the WPCF. During rainy periods, it is assumed that net flows are toward White Slough and the San Joaquin River. In the dry months from July to October, the WPCF discharge represents the major flow into Dredger Cut. Diversions for agricultural irrigation at three locations can cause flow reversals into Dredger Cut, bringing water in from White Slough and Bishop Cut.

Black & Veatch, the project engineers, investigated flow conditions in Dredger Cut and surrounding waterways using a DWR hydrologic model of the Delta. Their investigations focused on summer conditions, when receiving water quality is the most likely to restrict beneficial uses and surface water discharge. Based on the DWR model and a limited amount of drogue monitoring, Black & Veatch concluded the following:

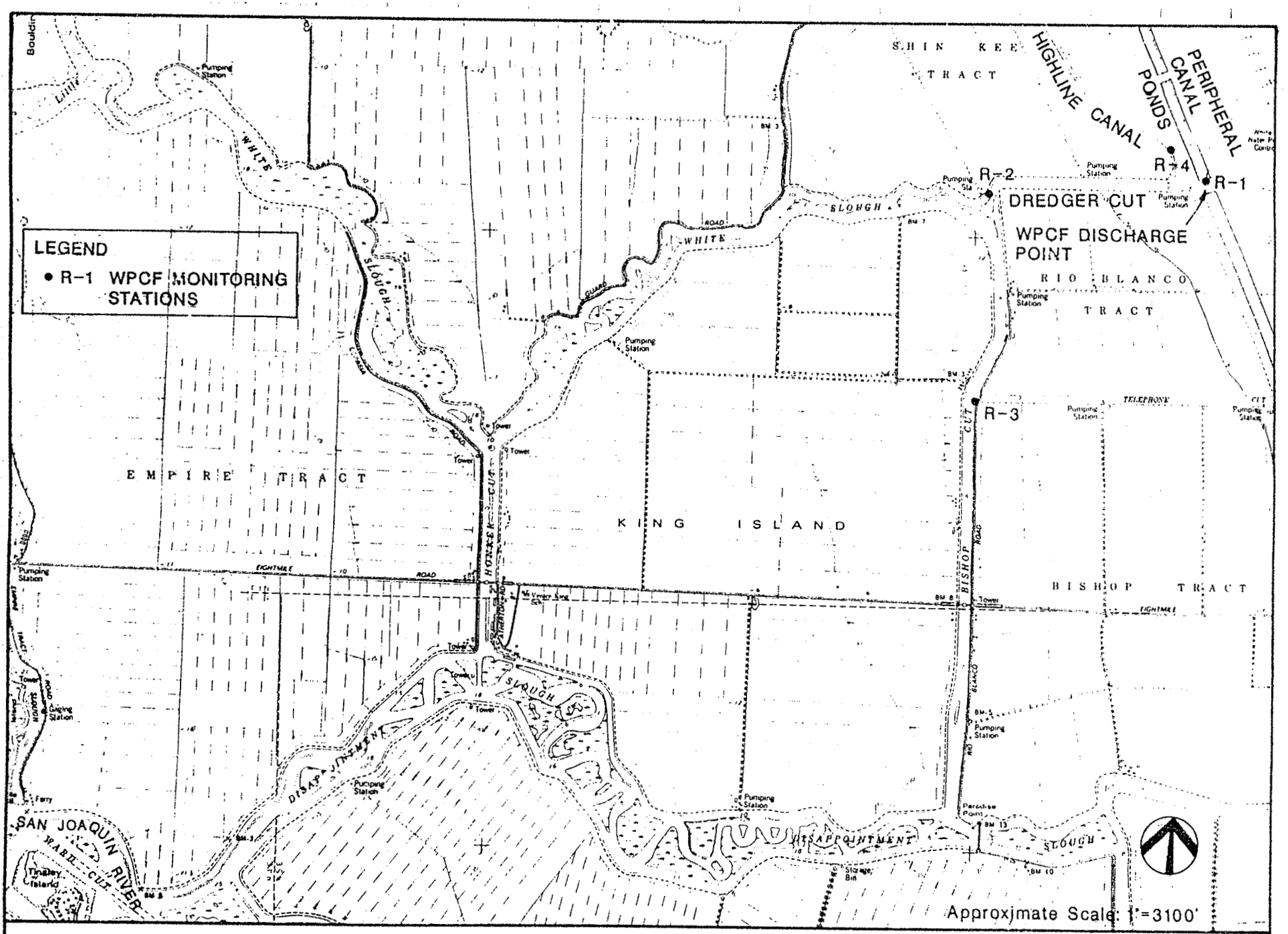


FIGURE 5-5. SURFACE WATER FEATURES IN THE PROJECT AREA

Base Map: USGS 7.5' 'Terminous' quadrangle

Summer flows in Dredger- Cut are caused by effluent from Lodi's White Slough wastewater treatment plant (9.3 cfs), tidal action (significant due to volume of the upstream marsh area), and 78 cfs of irrigation water usage. The net effect is flow toward the plant outfall due to irrigation use.

Summer flows in White Slough and Bishop Cut are similarly influenced by tidal action (significant due to their volume), irrigation usage and flow from the Sacramento River south toward the San Joaquin River (estimated by DWR to be 57 cfs or 36.8 MGD in Bishop Cut at average conditions and tides).

DWR estimates the average volume of White Slough to be 2,066 acre feet or 673 MG and that of Bishop Cut to be 848 acre feet or 276 MG. Average tidal fluctuation in the area is 3 feet, amounting to approximately a 140 MC exchange every 12 hours in White Slough and approximately 130 MG every 12 hours in Bishop Cut. (Jones pers. comm.)

Quality. A water quality summary for White Slough was reported in the Water Quality Control Plan Report for the Sacramento-San Joaquin Delta basin (California State Water Resources Control Board and Regional Water Quality Control Board, Central Valley Region 1975b). This summary (Table 5-3) shows no major water quality problem in White Slough at that time. Receiving water quality monitoring data collected by the City of Lodi in recent years, however, show periods of depressed DO near the point of wastewater discharge into Dredger Cut (Table 5-4). DO concentrations below the receiving water standard of 5 mg/l have not been attributed directly to the wastewater discharge; low DO levels are common in summer months in the smaller Delta sloughs with poor circulation.

No water quality data are available for the peripheral canal ponds located along the western fringe of the WPCF property. There have been reports of fish kills, however, in several of these ponds. (See the "Biological Resources" section of this chapter.)

The Existing Waste Discharge. The White Slough WPCF currently discharges effluent into Dredger Cut at the location shown in Figure 5-5. The quality restrictions placed on Lodi's wastewater discharge are listed in Appendix D. The limitations on BOD and TSM vary from the wet weather to the dry weather seasons, with more stringent limits (20 mg/l monthly average) applying in the July through October period. Limitations also are placed on chlorine residual (0.1 mg/l) to protect aquatic organisms, settleable matter (0.1 mg/l) to avoid sedimentation, total coliform organisms (23 MPN/100 ml) to protect recreational uses, and oil and grease (10 mg/l) to protect all beneficial uses. During the late summer period, effluent is diverted to irrigation an average of 4 days per month; thus 87 percent of the effluent generated in July through October is discharged, on the average.

Flood Hazards. All lands west of I-5 in the project site and the neighboring areas are located within the 100-year floodplain of the Sacramento-San Joaquin Delta (Federal Emergency Management Agency 1986). The 100-year flood elevation is estimated to be 8 feet above mean sea level, compared to

Table 5-3. Water Quality Summary for White Slough Near Lodi

	Constituents										
Month	**EC**	**Cl**	**Na**	**SO_4**	**PO_4**	**N**	**BOD**	**CHLR**	**DO**	**T**	**TRB**
1	415	53	35	41	0.5	3.1	1.7	4.4	9.6	9.5	31
2	512	58	40	--	--	--	1.3	4.7	9.3	11	24
3	326	47	22	16	0.6	0.7	1.2	10	8.9	14	29
4	228	12	16	23	0.5	1.1	2.3	66	10	16	30
5	252	--	--	--	--	--	1.1	22	8.2	18	38
6	195	35	--	19	0.1	1.2	1.4	21	7.5	20	33
7	219	21	15	12	0.3	1.1	1.3	22	6.5	25	29
8	200	--	--	--	0.2	--	1.3	19	7.0	25	32
9	215	16	--	12	0.3	0.8	1.1	19	7.3	23	18
10	180	12	14	10	0.6	0.5	1.6	16	8.3	18	18
11	191	--	--	--	--	--	1.2	9.4	8.4	15	15
12	290	43	13	19	--	--	1.5	8.6	10	7.7	17
Minimum	124	5.0	6.5	7.0	0.1	0.5	0.2	3.6	5.5	4.0	9.0
Average	255	27	20	18	0.4	1.2	1.4	20	8.3	17	26
Maximum	660	58	40	50	1.1	3.8	4.1	160	12	25	55
Number	47	17	15	17	15	11	37	32	46	46	45

Source: California State Water Resources Control Board and Regional Water Quality Control Board, Central Valley Region 1975b.

Table 5–4. Monthly Average Receiving Water Dissolved Oxygen Measurements

Year/ Station[a]	Monthly Average Dissolved Oxygen Concentration (mg/l)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1980												
R-1	4.4	5.6	5.8	9.0	--	--	--	--	5.3	3.9[b]	6.8	6.6
R-2	6.2	7.7	1.6	8.2	--	--	--	--	7.5	6.3	8.4	8.9
R-3	7.9	8.7	8.4	8.4	--	--	--	--	8.5	7.6	8.6	9.2
1981												
R-1	6.4	6.4	6.8	6.7	--	--	--	--	5.2	5.3	5.5	6.8
R-2	8.4	7.6	9.4	11.5	--	--	--	--	8.0	7.3	7.2	8.4
R-3	8.8	7.9	9.5	12.3	--	--	--	--	8.4	8.3	7.8	8.7
1982												
R-1	6.0	6.2	7.0	5.7	--	--	--	4.4	3.8	5.4	5.5	6.0
R-2	10.1	8.9	9.1	8.5	--	--	--	6.7	6.6	7.7	7.6	0.6
R-3	9.8	9.8	9.5	9.0	--	--	--	7.7	8.0	8.8	8.0	9.1
1983												
R-1	6.7	--	--	6.0	6.2	5.6	--	--	4.3	5.0	5.4	5.4
R-2	8.4	--	--	8.4	11.5	8.9	--	--	6.4	6.3	6.4	7.1
R-3	8.8	--	--	9.7	12.3	7.8	--	--	7.3	7.6	7.5	8.2
1984												
R-1	5.9	6.1	6.0	6.6	4.8	5.2	4.8	4.1	4.7	4.2	4.7	5.7
R-2	8.3	8.3	9.2	9.2	8.2	7.4	8.1	8.0	7.1	8.3	9.4	9.7
R-3	9.6	9.8	9.4	9.3	8.8	7.8	8.7	8.8	8.4	9.3	10.6	10.2
1985												
R-1	5.6	4.6	5.8	--	5.0	5.3	6.1	5.0	6.4	7.1	6.9	7.3
R-2	11.3	10.7	11.2	--	9.2	8.1	7.0	7.3	7.4	8.8	10.2	8.8
R-3	11.9	11.0	11.9	--	9.3	8.2	6.8	8.4	8.2	7.8	10.3	9.2
1986												
R-1	7.1	6.2[c]	6.1[c]	6.2	6.5	--	4.7	5.2[b]	5.1	6.0	5.5[d]	5.8[c]
R-2	8.0	5.6	5.7	11.8	10.2	--	10.0	8.5	8.7	8.6	7.2	7.1
R-3	--	--	--	11.2	10.2	--	--	9.3	9.1	8.9	8.3	--
R-4	--	--	3.1	6.7	8.0	--	8.4	6.5	6.7	7.5	5.7	5.5
1987												
R-1	5.9[d]	5.6	5.7									
R-2	8.7	9.0	9.3									
R-3	--	--	--									
R-4	6.0	6.5	7.1									

Note: Data is for period January 1980 through March 1987. Dashes indicate periods of no data gathering.

[a] See Figure 5–5 for monitoring station locations.

[b] 1 day less than 5 mg/l.

[c] 3 days less than 5 mg/l.

[d] 2 days less than 5 mg/l.

Source: Black b Veatch 1987b.

ground elevations of 3 feet near the peripheral canal ponds and 7 feet near I-5. Thus, floodwaters would be 5 feet deep on the western edge of the city's effluent-irrigated fields diminishing to about 1 foot deep near the treatment works. Since they are not protected by levees, the peripheral canal ponds and the lowermost fields would be inundated by floods more frequently than the recurrence of the 100-year flood. Floodwaters would be up to 3 feet deep adjacent to the wastewater ponds during the 100-year flood, which is well below the top of the pond levees.

The city's lands east of 1-5, lying at an elevation of 7-10 feet, are protected from Delta flooding by the 1-5 embankment. They are, however, located within an extensive 500-year floodplain resulting from the combined effects of Delta and Mokelumne River flooding. Accordingly, lands immediately south of the city's lands considered for additional land disposal of effluent and sludge under one alternative (E2), as well as nearly all lands within the offsite sludge disposal study area considered under another alternative (S), are located within a 500-year floodplain.

Groundwater Resources

Depth. The groundwater table is moderately shallow under much of the project site. Irrigated soils mapped nearest the peripheral canal pond west of the lagoons characteristically have seasonally high perched water at a 3.5- to 5-foot depth (U. S. Soil Conservation Service 1987). This occurs during January and February, the nonirrigation season. During irrigation periods, the highest water table observed by monitoring wells in the same area was at a depth of 6 feet (Forkas pers. comm.). The surface of the water in the peripheral canal ponds is a good indicator of the depth of the water table in that area.

The water table in the vicinity of the treatment ponds ranges from 0.5 to 7.8 feet beneath the bottom of the ponds, depending on the season.

Direction of Flow. Two factors influence the direction of groundwater flow beneath the project site. Groundwater recharge from the Mokelumne River channel tends to cause a westerly groundwater flow from the Lodi area toward the Delta waterways. However, a substantial depression in the groundwater surface in the Stockton area, due to pumping withdrawals, tends to create a southeasterly groundwater flow away from Delta waterways in the project area toward north Stockton. The most recent groundwater depth monitoring (San Joaquin County Flood Control and Water Conservation District 1987) suggests the fatter effect currently dominates the project area. Thus, under the current groundwater use situation in San Joaquin County, groundwater beneath the city's ponds and fields appears to move to the south or southeast. Although some of the shallow flow may enter the peripheral canal ponds and the eastern terminii of Dredger Cut and Telephone Cut (Figure 3-21, most of the groundwater beneath the project site apparently flows parallel to the edge of the Delta toward the south-southeast.

Quality. Because nitrates above certain concentrations can have serious or even fatal health effects, because they are highly soluble and mobile in groundwater, and because effluent and sludge are high in nitrogen, nitrates are often central to the concern for water quality. In the

project area, high levels of nitrogen in groundwater would suggest the possible presence of other pollutants as well. EPA has established a primary drinking water standard for nitrate nitrogen of 10 mg/l (or 45 mg/l for nitrate).

Observations in groundwater monitoring wells near the treatment ponds and spread throughout the city's agricultural fields revealed, during measurement in August 1987, nitrate nitrogen concentrations ranging from 0 to 0.5 mg/l. The average concentration was 0.15 mg/l, or between 1 and 2 percent of the federaf standard (Black & Veatch 1987a). These low concentrations suggest little contamination of the groundwate body from the treatment ponds and the effluent and sludge disposal fields.

The above observations are corroborated by nitrogen loading studies for the city's fields performed by the project design engineers (Black & Veatch 1987b). These theoretical studies suggest that recent nitrogen loading has been about 20 percent below the maximum allowable loading (based on plant uptake rates, denitrification rates, and a residual 10 mg/l total nitrogen in any downward percolating surplus water).

Nitrate concentrations in the wastewater ponds as measured in the spring of 1987 are consistent with the absence of high nitrate concentrations in the groundwater. Although total nitrogen in the ponded wastewater ranged from 28 to 35 mg/l, only trace concentrations of nitrites and nitrates were found (Black & Veatch 1987b).

High concentrations of other possible pollutants (i.e., high concentrations of coliform bacteria, chemical oxygen demand) in the groundwater beneath the project site have not been indicated by groundwater monitoring. The low levels of nitrates suggest the probability that other pollutant concentrations are also low. Analysis of six soil samples at the project site in July 1987 indicate that heavy metal contamination due to effluent and sludge disposal has not been significant (Table 5-2). These loamy soils have a high cation exchange capacity (more than 15 meq/100 g), enabling them to efficiently capture heavy metals from downward percolating irrigation waters,

Impacts of the Proposed Project

Effluent Changes. As average daily domestic wastewater flows increase from 5.8 MGD to the proposed design capacity of 8.5 MGD, the number of discharge days to Dredger Cut would be expected to increase from 155 to 159 days during the growing season (April through October). Annually, discharge days would be expected to increase from 286 to 305 days. The number of discharge days is controlled primarily by the acreage of the city's agricultural lands, and secondarily by the capacity of the storage ponds. (Black & Veatch 1987b.)

The volume of discharged effluent would therefore increase substantially. During the growing season, a 50 percent increase in discharged volume would be expected. A 56 percent increase would be expected on an annual basis.

The quality of discharged effluent would increase substantially, however. Whereas a maximum of 20-30 mg/l BOD and TSM is permitted, varying by season,. the maximum concentrations could generally be reduced to 10 mg/l (Table 5-5). Accordingly, the maximum total masses of these discharged pollutants would actually decrease. During the growing season a 25 percent reduction would be predicted, and a 22 percent reduction would be expected annually (Table 5-6).

Table 5-5. Design Pollutant Concentrations

Constituent	Monthly Average	Daily Maximum
BOD, mg/l	10	50.0
Total suspended matter, mg/l	10	50.0
Settleable matter, ml/l	--	0.1
Chlorine residual, mg/l	-	0.1
Total coliform organisms, MPN/100 ml	--	500
Oil and grease mg/l	10	15

Surface Water Changes. Runoff and irrigation tailwater from the land used for land disposal would continue to be contained, collected, and recirculated. Therefore, only the effluent directly discharged to Dredger Cut would affect surface waters of the Delta. Changes in the discharged effluent would not adversely affect water quality or uses of the peripheral canal ponds, as there is no known hydrologic connection between Dredger Cut and the ponds.

The dilution of effluent into receiving waters would decrease in proportion to the increase in effluent volume. Data are available to infer only partially the order of magnitude of the effluent dilution. Using the DWR Delta model, Black & Veatch estimated an average net flow of 78 cfs in Dredger Cut flowing from White Slough to upstream irrigation water diversions from Dredger Cut (Jones pers. comm.). During the irrigation season, effluent discharges of 13 cfs would mix with this 78 cfs flow in the tidal channel and be diverted to irrigate various cropland. At other times, the effluent would become tidally mixed in the complex of channels including White Slough, Bishop Cut, and Disappointment Slough. Flows in these channels are greatly influenced by the transfer of Sacramento River water across the Delta into the San Joaquin River system. During the summer, net flow through White Slough is estimated to be 134 cfs. Under these conditions, future effluent would be diluted 10:1. The precise dilution ratios for different hydrologic,conditions have not been measured, however.

As indicated earlier, the loading of BOD and TSM is expected to be less than at present, even though the total discharge volume would increase. Mass loading at full utilization of the expanded WPCF capacity would be about the same as mass loading occurring in 1981-82 (based on a flow of 4.3 MGD and 20/20 treatment at that time). Consequently, the impact of the

Table 5-6. Maximum Pollutant Discharges into Dredger Cut

	Discharge Days/Month				Discharged Masses BOD, TSM[a]/Month			
	Existing	Proposed Project	Alternative E1	Alternative E2	Existing[b]	Proposed Project[c]	Alternative E1[c]	Alternative E2[c]
January	27	30	30	30	26.109	21,270	21,270	21,270
February	24	27	27	27	23,208	19,143	19.143	19,143
March	27	30	30	30	26.109	21,270	21,270	21,270
April	28	28	29	20	27,076	19,852	20,561	14,180
May	12	20	30	12	11,604	14,180	21,270	8,508
June	8	15	29	12	7,736	10,635	20,561	8,508
July	27	7	30	7	26,109	4,963	21,270	4,963
August	27	30	30	21	26,109	21,270	21,270	14,889
September	26	29	29	23	25,142	20,561	20,561	16.307
October	27	30	30	27	26,109	21,270	21,270	19,143
November	26	29	29	29	25,142	20,561	20,561	20,561
December	27	30	30	30	26,109	21,270	21,270	21,270
Growing Season (April-October)	155	159	207	122	149,885	112,731	146,763	86,498
(% of existing)	(100)	(103)	(134)	(79)	(100)	(75)	(98)	(58)
Annual	286	305	353	268	276,562	216,245	250,277	190,012
(% of existing)	(100)	(107)	(123)	(94)	(100)	(78)	(90)	(69)

[a] BOD = biochemical oxygen demand.
TSM = total suspended matter.

[b] 20 mg/l in 5.8-MCD flow.

[c] 10 mg/l in 8.5-MCD Row.

discharge on water quatity, and thus on beneficial uses, would be expected to stay about the same as in the recent past.

DO is the principal monitoring parameter to provide evidence of water quality degradation resulting from an overload of BOD or putrescible suspended matter. The state DO standard for the affected sloughs is 5 mg/l. Monitoring pursuant to RWQCB Order 86-041 has shown that DO was depressed below 5 mg/l on a few days (Table 5-4). Inspection of the data does not indicate a relationship between the discharge of BOD and TSM and the DO concentrations at monitoring stations. Since the DO concentration at monitoring station R-2 has occasionally been less than 5 mg/l, it can be assumed that the effluent has had a significant impact at times. Any statistical analysis would require extensive measurements of the hydrology and water quality of the system, and this work has not been performed. The data at hand and the proposed change in effluent quality do not seem to warrant such a study.

The discharge of toxicants from the WPCF has not been assessed by measurement of toxic substances except for chlorine, which is kept below 0.1 mg/l. Industrial wastes are collected separately and are applied only to land. Domestic wastewaters are typically low producers of toxic substances. Consequently, it has been assumed that the toxic effects of the discharged effluent are less than significant after dilution in Dredger Cut and White Slough.

The discharge of putrescible waste and other nutrients, especially nitrogen and phosphorus, are expected to stimulate greater biological productivity in White Slough and interconnected waterways. As long as the water quality standard of 5 mg/l is met, this increase in productivity is considered tolerable and acceptable. Other significant sources of nutrients to the system also exist, in particular agricultural drainage, urban runoff, and other municipal and industrial wastewater discharges.

In the aggregate, the impact of the WPCF discharge is judged to be less than significant outside Dredger Cut and its confluence with White Slough. The effluent proportionately adds to the cumulative discharge of nutrients into the Delta, which, when within acceptable levels, are important to the productivity of striped bass and other fish and wildlife feeding in the Delta. None of the beneficial uses of Delta channels are expected to be significantly impacted by the proposed discharge, either directly or in its cumulative addition to other similar discharges into the Delta.

Flood Hazards. The proposed project would not affect flood depths, areal extent of flooding, or velocities of floodflows of any flood events. Physical alterations of the landscape resulting from the project are too limited to cause such effects.

The proposed project would not be expected to significantly increase the potential for contamination of floodwaters by treated wastewater constituents remaining in the city's agricultural fields after land application of effluent and sludge. Because sludge has been and would continue to be spread along with effluent on the city's fields, some contamination of floodwaters from sludge and effluent residuals in the topsoil would continue to occur during major flood events. However, flooding is relatively infrequent, and

dilution capacity of floodwaters is high. The DHS-recommended practices for land application of sludge do not exclude the use of flood hazard areas (California Department of Health Services 1983).

During flooding situations, it is possible that effluent discharged to Dredger Cut could enter the peripheral canal ponds, but this would be a very infrequent occurrence. No information is available to suggest this circumstance would seriously affect the current uses of the ponds.

The potential flood hazards of the proposed project are therefore considered less than significant.

Groundwater Resources. The proposed project entails a ?-percent increase in the irrigation water annually applied to the city's agricultural lands. This amount would not significantly raise the water table. Direction of groundwater flow would also therefore not be significantly altered.

Groundwater quality would not be expected to significantly decrease, but the nature of large-scale land disposal of effluent and sludge indicates the potential for a significant decrease. The application of additional nitrogen to the existing disposal area soils is proposed through continuance of combined sludge and effluent disposal.

The proposed rates of effluent and sludge application are based on matching agronomic rates of nitrogen utilization. Considering the anticipated domestic effluent nitrogen concentration after 10/10 treatment, the present nitrogen concentrations in the industrial effluent, estimates of corn and alfalfa nitrogen use and soil nitrogen volatilization, and the maximum numher of land treatment diversion days the system can allow, the city's current agricultural acreage can provide disposal until system inflows reach an estimated 8.8 MCD. This flow is somewhat beyond the proposed expanded treatment capacity. Thus, if agronomic rates of application can be achieved, little leaching of excess nitrogen into the groundwater body would be expected from the proposed project.

Combined sludge and effluent disposal is not a common practice. Maintenance of agronomic rates of nitrogen for combined sludge and effluent application would require careful control of application and monitoring. This fact gives rise to the potential for a significant nitrogen loading of the site's shall groundwater. This potential requires the adoption of mitigation measures involving the monitoring of effluent and sludge application rates and pollutant concentrations in effluent, sludge, soils, and groundwater between the disposal area and the peripheral canal ponds. Monitoring that revealed overapplication should result in appropriate reductions of appiication rates by expanding the city's acreage and/or instituting offsite sludge disposal.

If groundwater degradation from nitrogen loading does not occur, significant degradation due to other substances would not be expected. Disposal site soils can absorb heavy metals for at least 150 years, according to the project engineers (Black & Veatch 1987a). However, monitoring should include heavy metals and selected organic compounds as well.

Mitigation Measures

Surface Waters. None are required in the absence of an anticipated significant impact.

Flood Harards. None are required in the absence of an anticipated significant impact.

Groundwater Resources. The potential for groundwater quality degradation due to combined sludge and effluent disposal at rates exceeding the agronomic rates for nitrogen utilization can be mitigated to less than significance by expanded monitoring and appropriate action as indicated.

This monitoring should include analysis not only of nitrogen application but of other potential pollutants as well. Effluent ponds should continue to be monitored for DO, and effluent discharge should continue to be monitored for BOD, settleable matter, and rates of application. Sludge should be monitored for heavy metals, nitrogen, PCBs, total solids, pH, and rates of application. Soils should be monitored for pH, heavy metals, cation exchange capacity, concentrations of other major nutrients needed for maximizing crop production (phosphorous, potassium), and parameters needed to assess ammonia volatilization. Groundwater should be monitored for depth, nitrate concentrations, coliform bacteria, chemical oxygen demand, heavy metals, and selected organic compounds.

If significant degradation of groundwater quality is observed, the city and the RWQCB should assess the situation and take appropriate action. This action might include expanding of the city's acreage for sludge and effluent disposal (Alternative E2), or instituting offsite sludge disposal (Alternative S), or a combination thereof.

Impacts of the Project Alternatives

Significant Impacts Reduced

Surface Waters. Significant project impacts to surface waters are not expected. Alternative E2 would reduce the annual volume of effluent discharged into Dredger Cut, however, thereby reducing the likelihood that the discharge could adversely affect surface water quality.

Flood Hazards. Significant project impacts to floodwaters are not expected.

Groundwater Resources. The potential for groundwater degradation from the difficulties in maintaining agronomic rates of nitrogen application during combined sludge and effluent disposal would be significantly reduced under Alternative S. The collecting in lagoons, drying, and mechanical surface spreading of sludge provides for easier maintenance of agronomic application rates throughout the application areas. If agronomic rates could be maintained, however, the separation of effluent and sludge disposal onto two different acreages would not promise any particular benefit.

Alternative E1 would also substantially reduce the potential for exceeding agronomic rates of nitrogen application during combined sludge and effluent disposal. This alternative would result in a nitrogen application onto the proposed (current) disposal site of about 20 percent of the proposed agronomic application rate.

Alternative E2 would not reduce the potential for groundwater degradation. In reducing potential surface water quality degradation, Alternative E2 would increase potential groundwater degradation, as described in the following section.

Other Impacts Caused

Surface Waters. Alternative E1 would increase effluent discharge into surface waters during the summer months, a critical period for water quality in Delta channels. This increase would add to the risk that the WPCF effluent could create DO sags in Dredger Cut and connecting channels, especially in low rainfall years.

Alternative S could increase the risk of surface water contamination from lands receiving sludge applications. Siudge would be applied to areas not under the direct management of the city. Improper control of runoff from sludge-amended fields would become more likely, although the city could require the installation of proper drainage control prior to sludge deliveries.

Flood Hazards. Alternatives E2 and S would involve use of lands west of I-S within the 500-year floodplain for land disposal of effluent and sludge. Floodwater contamination by residual contaminants in the topsoil would therefore occur infrequently. The effect is therefore not significant.

A possible exception would be offsite sludge disposal in the extreme southwest corner of the sludge disposal study area. A 180-acre area is located within a 100-year floodplain. However, as described under "impacts of the Proposed Project," the magnitude of potential floodwater contamination of this frequency is also considered less than significant. Thus, this area does not require exclusion from lands considered suitable for sludge disposal use.

Groundwater Resources. If agronomic rates of nitrogen application were unintentionally and unexpectedly exceeded durinq offsite sludge disposal in the study area west of I-5, the deeper groundwater levels there, compared to the proposed disposal area, would lessen the potential for degradation of groundwater quality. The impacts on groundwater quality under Alternative S are therefore projected to be less than significant.

The impact:: of Alternative E2 would be similar to the proposed project, except that the acreage committed to combined sludge and effluent disposal would increase by nearly 50 percent. The difficulties in maintaining application rates at agronomic rates would be commensurately more difficult than for the proposed project. Overapplication of nitrogen and ensuing degradation of groundwater quality is a potentially significant impact of Alternative E2.

Setting

Habitats. City lands surrounding the WPCF and adjacent lands consist of the landscaped and paved areas near the plant, treatment ponds, agricultural fields, and undeveloped natural habitats.

Land surrounding the treatment plant includes a small landscaped area with lawns and scattered eucalyptus and pine trees. This area provides habitat for a few native bird species such as killdeer, American robins, Brewer's blackbirds, and water pipits, as well as introduced bird species such as rock doves, European starlings, and house sparrows.

The treatment ponds and surrounding levees are an important resting point for migrant and wintering shore birds and waterfowl. Members of the Stockton Audubon Society have recorded a long list of bird species at the ponds, including mallards, northern pintails, northern shovelers, cinnamon teal, green-winged teal, canvasback, lesser scaup, ruddy ducks, black-necked stilts, American avocets, black-bellied plovers, and a host of other bird species (Yee pers. comm.).

Agricultural lands surrounding the plant are city-owned and are used to produce alfalfa, corn, and pasture grasses (Figure 3-4). A weedy upland vegetation dominated by annual grasses and forbs such as brome grasses and black mustard, with occasional willow and cottonwood trees, surrounds the fields and lines the edges of service roads. Portions of some irrigation canals have fringes of freshwater marsh (described below). The agricultural lands attract a variety of wildlife species. Northern harriers, black-shouldered kites, red-tailed hawks, and American kestrels forage for small mammals, such as California voles, deer mice, house mice (introduced), pocket gophers, and California ground squirrels, that inhabit these fields. Other common bird species that frequent agricultural fields in the project area include ring-necked pheasants, horned larks, water pipits, red-winged blackbirds, and western meadowlarks.

Undeveloped lands and waterways west and adjacent to the agricultural fields are potentially affected by the project, because the WPCF outfall structure releases treated water into Dredger Cut, one of several interconnected waterways that supports important natural habitats and special-status plant species. These natural habitats are located along various canals (e.g., Dredger Cut, Highline Canal), sloughs, the peripheral canal ponds, and on undeveloped lands adjacent to some of these waterways.

Undeveloped lands support various wetland and riparian habitats, including freshwater marsh, open water, willow-cottonwood forests, and disturbed uplands with wetland vegetation. Freshwater marshes form narrow bands of herbaceous vegetation along the waterline of canals and sloughs, at landslide levee toes, and within low depressions. A portion of the east side of the Highline Canal is unleveed, and a large tidal marsh (about 50 acres) lies between the canal and adjacent uplands (Figure 3-2). It is the most important marsh to wildlife in the area.

Marshes in the project area are characterized by dense, 5- to 10-foot-tall swards of emergent aquatic vegetation. Cattails, tules, and common reed dominate the vegetation, with other less abundant native species such as verbena, nettles, Pacific rush, umbrella sedge, and Douglas baccharis intermixed. Marshes in the project area are flooded directly by tidal action or indirectly by groundwater that rises with the tides or increased volume of water in adjacent canals.

The freshwater marshes provide abundant food and cover for wildlife. Birds such as American bitterns, great blue herons, green-backed herons, black-crowned night-herons, belted kingfishers, common yellowthroats, marsh wrens, and song sparrows occur in these habitats. Reptiles such as giant garter snakes (see "Special-Status Wildlife Species" below) and amphibians such as Pacific treefrogs and bullfrogs also frequent the freshwater marshes.

Sloughs and canals are characterized by open water with sparse to dense cover of floating, aquatic vegetation dominated by water hyacinth, duckweed, and water milfoil. A narrow fringe of freshwater marsh often occurs at the water's edge. The upper banks support a dense, weedy herbaceous vegetation dominated by annual grasses, black mustard, sweet fennel, horseweed, chickory, and dense Himalaya berry brambles. Shrubby willow, black willow, and cottonwood trees are scattered along the upper banks. The 50-acre marsh is encircled by a raised berm with brambles and trees. The landside levee toe of the Highline Canal has a continuous row of black willow and cottonwood trees with a marsh or bramble understory.

A line of borrow pits forms the west edge of the city's irrigated fields associated with the WPCF. They were excavated to provide fill for construction of 1-5 and to serve as the future Peripheral Canal. The edges of some of the flooded pits are surprisingly devoid of marsh or woody riparian vegetation, while others had a discontinuous row of willows and cottonwoods; the banks support the weedy grass-dominated herbaceous vegetation described above. A shallower borrow pit contains hundreds of young willow and cottonwood saplings and trees, with a herbaceous understory of wetland plants.

Open water areas along Dredger Cut, the borrow pit ponds, the Highline Canal, and White Slough are frequented by many wildlife species. Muskrats, beaver, pied-billed grebes, western grebes, Forster's terns, double-crested cormorants, American coots, mallards, gadwalls, and ruddy ducks forage on fish, aquatic invertebrates, and submerged aquatic vegetation.

The undeveloped uplands adjacent to sloughs, canals, marshes, and borrow pits are not directly linked to open water, but they are dominated by wetland plant species. The presence of these species shows that groundwater is near the soil surface. The presence of vegetation dominated by 'species typical of disturbed habitats indicates these uplands may be abandoned agricultural land. The herbaceous vegetation is dominated by Bsltic rush, curley dock, bull thistle, bermuda grass, salt grass, ambrosia, and various unidentifiable grass species. Scattered willow and cottonwood trees form a patchy overstory.

Wildlife diversity in riparian woodlands is typically the highest of any terrestrial habitat type in California. Willow and cottonwood trees growing along canals in the project area are critical to wildlife despite their relatively small acreage in the study area. They provide stopover sites for migrant songbirds arid roost sites for larger birds such as great egrets, black-crowned night-herons, black-shouldered kites, red-shouldered hawks, Cooper's hawks, great horned owls, and common barn-owls. A variety of raptors and other birds that forage in surrounding areas may nest in riparian trees. Carnivores such as raccoons, gray fox, striped skunks, and possibly ringtails use riparian habitats in the project area for cover, dispersal routes, and foraging.

Special-Status Plant Species. Wetlands in and near the project area could support six special-status plant species that meet CEQA definitions of rare and endangered (Table 5-7). Special-status plants include the State of California's rare, threatened, or endangered species (California Department of Fish and Game 1987a), federally listed, proposed, and candidate threatened or endangered species (50 FR 39526-39584; September 27, 1985), and California Native lant Society rare and endangered species (Smith and York 1984). NG special-status plant species are reported in the project area, but the Suisun marsh aster, Mason's lilaeopsis, and California hibiscus have been found in the Delta waterways south and west of the project area (California Natural Diversity Data Base 1987). These species, and the others listed in Table 5-7, could occur in the wetland and riparian habitats west and adjacent to the city lands associated with the treatment plant.

The project site was not systematically surveyed for special-status plants because the WPCF expansion will not involve disturbance of natural habitats or waterways. However, during the site visits. a small California hibiscus population was found in the wetland east of the Highline Canal, 1,600 feet north of its connection to Dredger Cut.

Special-Status Wildlife Species. The following sources were consulted to determine which special-status wildlife species potentially occur in the project area:

- o federal-listed, proposed, and candidate threatened and endangered species (50 CFR 37958-37967);
- o California-listed and candidate threatened and endangered species (California Department of Fish and Game 1987b);
- o California fully protected species, which, although not listed as endangered or threatened, are protected by law in California (California Department of Fish and Game 1987b); and
- o other species of special concern to the California Department of Fish and Came (DFC) (Remsen 1978, Williams 1986).

Several special-status wildlife species have been observed in the vicinity of the WPCF, including California black rails, greater sandhill cranes, northern harriers, black-shouldered kites, Swainson's hawks, long-billed curlews, and giant garter snakes. The legal status and distribution of each of these species in the project area are given in Table 5-8.

Table 5-7. Special-Status Plants Potentially Occurring in the Project Vicinity

Scientific and Common Names	Status[a] Federal/State/CNPS	Distribution	Habitat
Aster chilensis var. lentus Suisun Marsh aster (Asteraceae - sunflower family)	C2 / / 1b	San Francisco, San Pablo, and Suisun Bays, Contra Costa, Solano, and San Joaquin Counties	Brackish, salt, and freshwater marshes within or above the zone of tidal fluctuation
Cirsium crassicaule Slough thistle (Asteraceae - sunflower family)	C2 / / 1b	Delta and lower San Joaquin Valley	Shallow water and saturated soils along sloughs, canals and rivers; often in disturbed riparian habitats
Hibiscus californicus California hibiscus (Malvaceae - mallow family)	C2 / t 1b	Delta and Central Valley from Butte County to San Joaquin County	Freshwatrr marsh vegetation in riparian habitats in areas with slow water velocities such as canals, sloughs, ponds, oxbows. etc.
Lathyrus jepsonii ssp. jepsonii Delta tule pea (Fabaceae - pea family)	C2 / / 1b	Delta and Central Valley from Butte County to Tulare County	River and canal banks in brackish and freshwater marshes, and riparian woodlands, above the zone of tidal influence
Lilaeopsis masonii Mason's lilaeopsis (Apiaceae - carrot family)	C2 / R / 1b	Suisun Bay and Delta within areas influenced by tides	Clay-peat deposits and woody debris in marsh vegetation within the zone of tidal fluctuation
Sagittaria sandfordli Sanford's sagittaria (Alismataceae - arrowhead family)	C2 / / 1b	Widespread but infrequent throughout California	Ponded water and mud flats in riparian and Delta habitats

Notes:

[a] Status definitions:

Federal (Federal Register Vol. 50:39526-39584):
C2 = A candidate species under review for federal listing. Category 2 includes species for which USFWS presently has some information indicating that "proposing to list them as endangered or threatened species is possibly appropriate," but for which further biological research and field study is usually needed *to* determine biological vulnerability and threats.

Note: Category *2* species are not necessarily less rare or less threatened. than Category 1 species. The distinction relates to the amount of data available and is therefore administrative rather than biological.

State (California Department of Fish and Game 1985):
R = State-listed rare species.

CNPS (Smith and York 1984):
1b = Plants considered rare or endangered by CNPS.

Table 5-8. Special-Status Wildlife Species of the White Slough WPCF Project Area

Species	Legal Status[a]	Distribution in Project Area	Source
California black rail (Laterallus jamaicensis coturnicus)	ST	1. Recorded along White Slough in late 1970s.	NDDB 1987
		2. Single bird observed at the large marsh west of borrow pond 11 during a high tide on April 27, 1982.	Gifford pers. comm.
		3. Two birds heard calling at the same marsh area on May 14, 1982.	Gifford pers. comm.
Greater sandhill crane (Grus canadensis tabida)	-	Observed at the marsh west of borrow pond 11 in winter.	Gifford pers. comm.
Northern harrier (Circus cyaneus)	CSC	Widespread in agricultural fields and freshwater marshes of the project area; probable nester.	Yee pers. comm.
Black-shouldered kite (Elanus caeruleus)	CP	Widespread in agricultural fields and freshwater marshes of the project area; probable nester.	Yee pers. comm.
Swainson's hawk (Buteo swainsoni)	ST	Regular spring-summer visitor to the project area; possible nester.	Yee pers. comm.
Long-billed curlew (Numenius americanus)	C2	No records from the project area. but observed in alfalfa fields to the east.	JSA observation
Giant garter snake (Thamnophis couchi gigas)	ST	Numerous records from the vicinity of the project area; the state wildlife area, and associated wetlands are a stronghold of this species in San Joaquin County.	NDDB 1987 and Hansen pers. comm.

Notes:

[a] Status definitions:

Federal (U. S. Fish and Wildlife Service 1985):

C2 = A candidate species under review for federal listing. Category 2 includes species for which the USFWS presently has some information indicating that "proposing to list them as endangered or threatened species is possibly appropriate," but for which further biological research and field study is usually needed to determine biological vulnerability and threats.

Note: Category 2 species are not necessarily less rare or less threatened than Category 1 species. The distinction relates to the amount of data available is is therefore administrative rather than biological.

State (California Department of Fish and Game 1985):

ST = Listed as threatened under the state Endangered Species Act.
CP = California "fully protected species"; individuals may not be possessed or taken at any time.
CSC = Considered a "Species of Special Concern" by the California Department of Fish and Came (Remsen 1979).

Fisheries. The fisheries resources in the sloughs and ponds (Figure 3-2) near the WPCF are comprised mainly of resident warmwater fish, with some utilization of Dredger Cut, White Slough, and Bishop Cut by migratory striped bass and American shad (Table 5-9) (California Department of Fish and Game 1987c, Moyle 1976, Turner and Kelley 1966, Urquhart pers. comm.). Warmwater game fish, especially white catfish, largemouth bass, bluegill, redear sunfish, and crappie, are the species of greatest concern because of their importance to the sport fishery.

Fishing activity is popular in both the sloughs and the peripheral canal ponds (Stark pers. comm.). The canal ponds initially filled with groundwater and were stocked with bass, sunfish, and catfish by DFG personnel (Meyer pers. comm.). The fish populations probably maintain themselves, but periodic flooding from the Delta channels during wet years undoubtedly adds to the resident population and introduces new species. Ponds 11 and 12 are the most prone to this periodic flooding (Dixon pers. comm.).

Fish kills have been reported in Dredger Cut and in peripheral canal ponds 10, 11, and 12 (Dixon pers. comm.). The most frequent kills reportedly occur in pond 12. The probable cause of the kills is presently unknown and is not readily determined. The kills in the ponds have been attributed to low DO levels that develop subsequent to inflow of flood waters, but documentation is lacking.

The BOD of the WPCF surface water discharge potentially contributes to fish kills in Dredger Cut. However, agricultural pollutants, especially from animal waste, are generated by several feed lot dairies in the vicinity, including one near the WPCF on a canal leading to Dredger Cut. Runoff from these animal pens can be expected to exhibit a very high BOD. Moreover, inflowing Delta waters from White Slough are observed to sometimes be deficient in DO (Black & Veatch 1987b). Because the WPCF effluent is discharged to Dredger Cut only when effiuent BOD and receiving water DO meet established limits, the potential effects of the discharge have been minimized.

impacts of the Proposed Project

Construction Effects. The proposed WPCF expansion would not involve a change in acreages or direct alteration of landscaped, agricultural, or undeveloped natural habitats in and near the project area. Known populations and suitable habitats of special-status plant and animal species would not be disturbed. Some weedy vegetation, however, would be disturbed within the plant treatment works area and along the irrigation system conveyances to be improved. The direct impacts of the project on the area's biological resources would therefore be negligible.

Operational Effects. The effects of the project on vegetation, wildlife, and fisheries in the Delta waterways and the peripheral canal ponds due to water quality changes are difficuit to predict.

Delta Waterways. The project may result in a net benefit to biological resources of the waterways because the proposed higher level of

river lamprey	Lampetra ayresi
Pacific brook lamprey	Lampetra pacifica
white sturgeon	Acipenser transmontanus
green sturgeon	Acipenser medirostris
American shad	Alosa sapidissima
striped bass	Morone saxatilis
chinook salmon	Oncorhynchus tshawytscha
steelhead trout	Salmo gairdneri
Warmwater Game Fish	
channel catfish	Ictalurus punctatus
white catfish	Ictalurus catus
yellow bullhead	Ictalurus natalis
brown bullhead	Ictalurus nebulosus
black bullhead	Ictaiurus melas
Sacramento perch	Archoplites interruptus
black crappie	Pomoxis nigromaculatus
white crappie	Pomoxis annularis
warmouth	Lepomis gulosus
green sunfish	Lepomis cyanellus
bluegill	Lepomis macrochirus
redear sunfish	Lepomis microlophus
largemouth bass	Micropterus salmoides
smallmouth bass	Micropterus dolomieui
Other Warmwater Fish	
threadfin shad	Dorosoma petenense
delta smelt	Hypomesus transpacificus
carp	Cyprinus carpio
goldfish	Carassius auratus
golden shiner	Notemigonus crysoleucas
Sacramento blackfish	Orthodon microlepidotus
hardhead	Mylopharodon conocephalus
hitch	Lavinia exilicauda
Sacramento squawfish	Ptychocheilus grandis
Sacramento splittail	Pogonichthys macrolepidotus
Sacramento sucker	Catostomus occidentalis
rainwater killifish	Lucania parva
mosquitofish	Gambusia affinis
Mississippi silverside	Menidia audens
threespine stickleback	Gasterosteus aculeatus
bigscale logperch	Percina macrolepida
tule perch	Hysterocarpus traskii
yellowfin goby	Acanthogobius flavimanus
prickly sculpin	Cottus asper
starry flounder	Platichthys stellatus

Sources: Moyle 1976, Urquhart pers. comm.

treatment would result in a net decrease of BOD and suspended solids in the discharged effluent as compared to the current discharge, even when inflows reach the new design capacity (8.5 MGD). This beneficial effect would be especially significant if the current discharge is contributing to depressed DO levels in the sloughs or in floodwaters entering the peripheral canal ponds. Such a relationship has not been established, however, as described in the "Water Quality" section.

Because the total effluent discharge of the WPCF to the Delta waterways would increase an estimated 56 percent when flows reach the new design capacity, pollutants unaffected or only partially reduced by new treatment level would increase in the receiving waters. Such pollutants could include soluble inorganic nutrients such as nitrogen and phosphorus and perhaps other substances. However, it is very unlikely that these nutrients are currently in short supply in the Delta waterways. Thus, increases in these nutrients may not increase the amount of aquatic vegetation.

As discussed in the "Water Resources" section, however, the discharged effluent enters a dead-end slough with little flow-through, low levels of DO (California Department of Fish and Game 1987c), and limited dilution capacity. Thus, all discharged pollutants tend to remain in the project vicinity. This potentially could contribute to adverse biological conditions in the sloughs, Highline Canal, and associated marshes, and in the peripheral canal borrow ponds during overflow periods. Of the special-status wildlife species mentioned above, the most sensitive are the aquatic species such as California black rails and giant garter snakes. Giant garter snakes are particularly sensitive to water contamination due to their highly aquatic behavior (Hansen pers. comm.). The primary potential impacts to fish, raptors, and other terrestrial species would be caused by changes in quality of their food supply.

It is concluded that although beneficial effects on biological resources in waterways would be expected to result from the higher treatment level of the proposed project, increased levels of some pollutants due to the increased discharge volume into Delta waterways potentially could occur. The effects of the current discharge on wetland vegetation, fisheries, and wildlife are not apparent. Primarily for this reason, the effect of a changed discharge cannot be accurately predicted. There is little reason to expect, however, that the increased discharge would have a significant adverse effect on the biological resources in the vicinity of the discharge or in the greater Delta waterway system.

Peripheral Canal Ponds. As described in the "Groundwater" portion of the "Water Resources" section above, the project entails some potential for overapplication of combined effluent-sludge to the city's fields, which could result in groundwater contamination. Pollutants could enter the peripheral canal ponds as influent groundwater, although the apparent direction of groundwater flow would minimize this potential effect. Nitrogen and phosphorus compounds in particular can stimulate algal growth in such ponds, leading to annual algal die-off and decomposition and depression of DO. In this way, groundwater inflows carrying excess nutrients from the effluent irrigation fields could have similar effects on biological resources as may inflow of floodwaters, as described earlier.

Low levels of nitrogen compotinds observed in groundwater monitoring wells suggest that this effect is not significant. Nonetheless, it must be concluded that the proposed project could potentially contribute to the ongoing fish kills in the peripheral canal ponds through groundwater contamination. This potentially significant effect is also too uncertain for further evaluation until appropriate monitoring data becomes available.

Mitigation Measures

Potentially significant effects on biological resources in the peripheral canal ponds due to potential groundwater contamination should be assessed through expanded water quality monitoring. Such monitoring also is described under "Mitigation Measures" in the "Water Resources - Groundwater Resources" section of this report.

Impacts of the Project Alternatives

Significant Impacts Reduced. Because Alternative E1 would increase the annually discharged effluent volume and masses of BOD and suspended solids by 16 percent as compared to the proposed project, it would tend to increase rather than decrease potentially adverse effects of the proposed project on Delta waterways. Alternative E2, on the other hand, would involve 12 percent less discharge and release of BOD and suspended solids than the proposed project, thereby tending to somewhat lessen potential project effects on Delta waterways.

Alternative E1, through reduced utilization of the city's disposal site, would virtually eliminate any potentially significant nutrient stimulation or toxic contamination of the peripheral canal ponds.

Alternative S would largely eliminate the potential for heavy metal or other toxic contamination of the site's groundwaters and the peripheral canal ponds' surface inflow. The potential for nutrient loading from the irrigation waters would be unchanged from that of the proposed project.

Other Impacts Caused. Alternative S, together with the proposed method of sludge disposal, would not be expected to adversely affect the area's biological resources. Cropland productivity would of course be affected; see the "Land Use" section. If sludge under Alternative S were applied to lands supporting natural habitats, however, significant adverse changes to these communities could be expected to result. Disposal within natural habitats has not been suggested as an alternative to the proposed project.

Land Use

Setting

Existing Land Uses. The WPCF site is located in San Joaquin County but is owned by and annexed to the city as a noncontiguous part of Lodi.

Delta farms are located to the west, and Lodi vineyards are located to the northeast. The general area is used for farming. The treatment plant and the city's effluent-irrigated lands are surrounded by the following land uses (Figure 5-6):

- o north: pasture; approximately 1 mile north is Saddle City, a truck stop, located at the I-5 interchange with Highway 12;
- o south: pasture; approximately 2 miles south are agricultural lands proposed for urban growth of the City of Stockton;
- o east: I-5 and right-of-way; east of I-5 is pasture and cropland;
- o west: pasture; and
- o interior exclusion: a 15-acre feed lot and agricultural storage facility operated by a private party on city-owned land.

Residences in the project area vicinity are associated with the agricultural land uses. The nearest residences are located adjacent to the eastern corner of the effluent-irrigated fields and approximately 0.25 mile northeast of the northeast corner of the fields. These locations are about 0.8-0.9 mile from the treatment plant. Other residences lie generally to the north, east, and south, approximately 1 mile from the site.

Lands immediately adjacent to and southeast of the project site could be considered for expansion of the city's irrigated acreage under one of the project alternatives (E2). This land consists of agricultural fields planted in corn, sugar beets, peppers, cabbage, alfalfa, and pasture grasses. One parcel is a fallow field.

Lands east of the site between I-5 and the city, which are under consideration for offsite sludge disposai under one of the project alternatives (S), are used for agriculture and also for agricultural homesites. This 32-square-mile area is bounded by Woodbridge Road on the north, Eight Mile Road on the south, Lower Sacramento Road on the east, and I-5 on the west (Figure 4-1). Uses consist of vineyards, orchards, dairies, field crops, pasture, hay and grain crops, truck crops, and native vegetation. Vineyards, orchards, and dairies comprise approximately 40 percent of the area. Most residential uses are incidental to the agricultural uses, but small areas of more dense residential uses are located along major arterials such as I-5, Kettleman Lane (Highway 12), and Lower Sacramento Road. Urbanization is encroaching into the eastern portion of the area, which is a part of the city's general plan study area for growth (Figure 4-1).

Planned Land Uses: Current City of Lodi Zoning and General Plan designations for the project site are "Public." San Joaquin County General Plan and Zoning apply to the surrounding lands. As shown in Figures 5-6 and 5-7, continuing agriculture is planned for the area. An exception is the Saddle City development.

Plans and policies relevant to the project and its alternatives include the Open Space and Conservation Element of the City of Lodi General Plan and the Land Use and Circulation Element of the San Joaquin County General

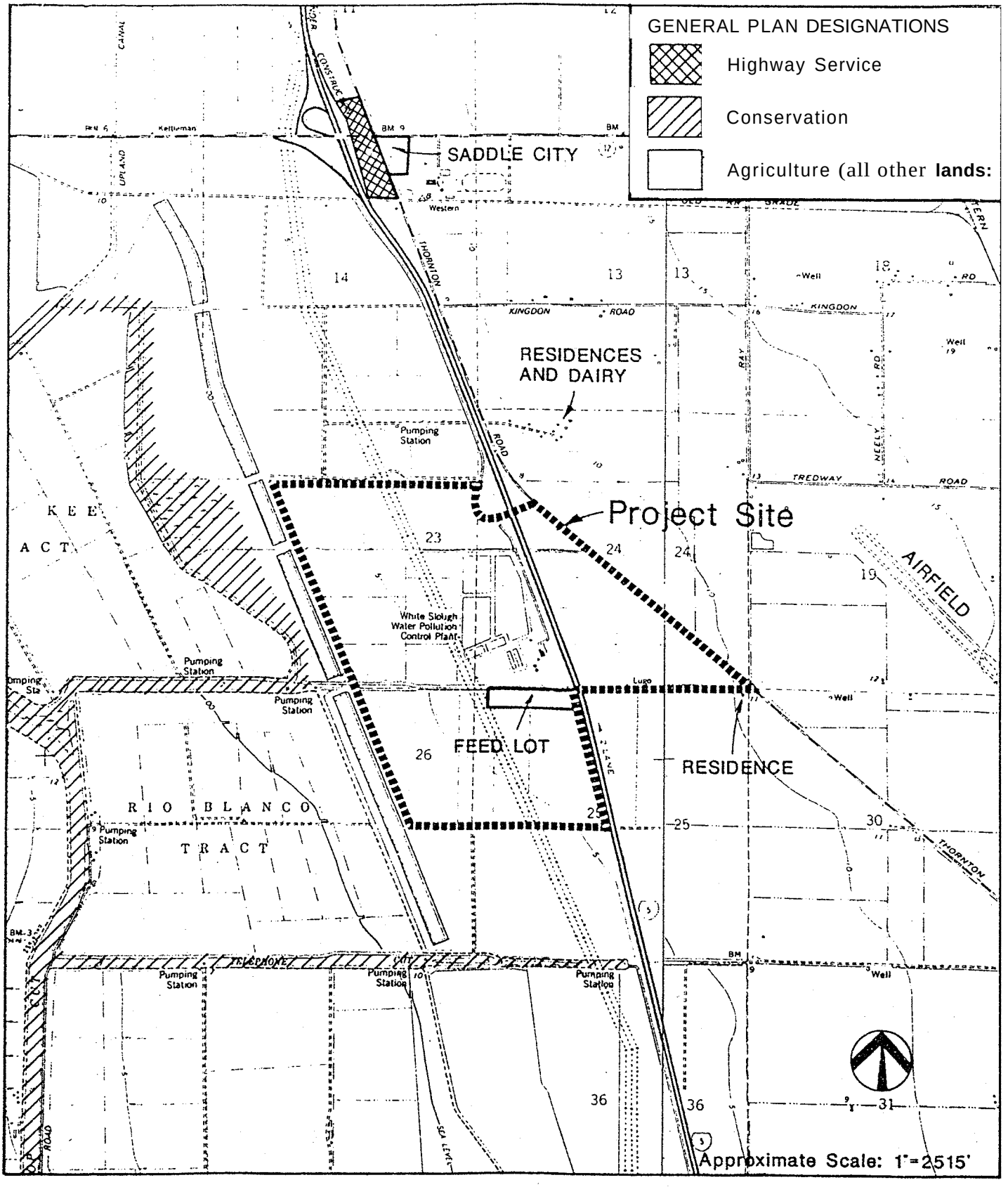


FIGURE 5–6. SAN JOAQUIN COUNTY GENERAL PLAN DESIGNATIONS AND LAND USES IN THE PROJECT VICINITY

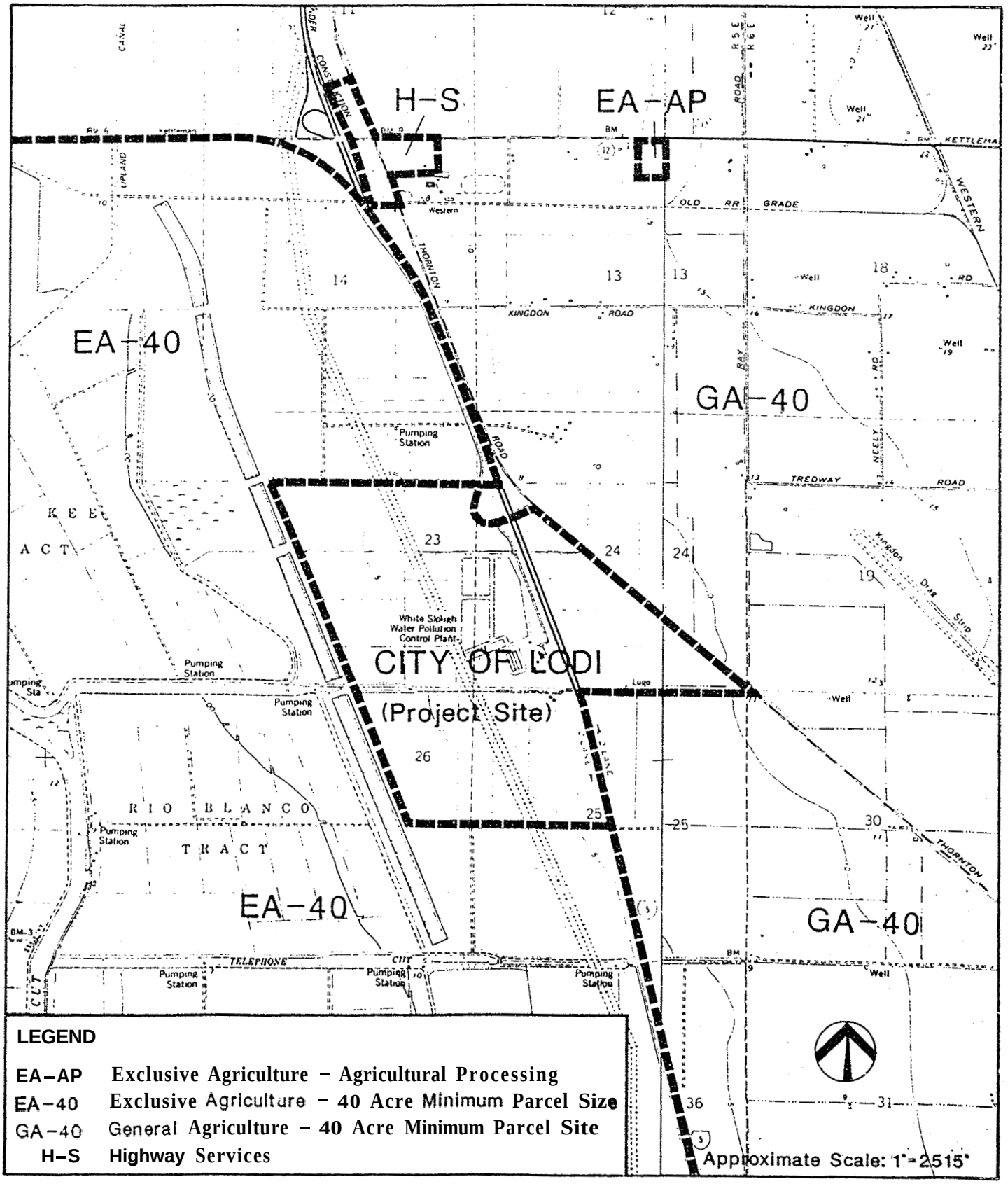


FIGURE *5-7.* **SAN** JOAQUIN COUNTY ZONING **MAP** FOR THE **PROJECT** VICINITY

Plan. The City of Lodi Open Space and Conservation Element was adopted in 1973 and is currently being updated. Pertinent policies are shown and analyzed for project consistency in Table 5-10. As shown, the project proposal is consistent with city general plan policy.

The San Joaquin County Land Use and Circulation Element was adopted in 1976 and is currently being updated. Pertinent policies aiso are analyzed for project consistency in Table 5-10. As shown, the project proposal is consistent with county general plan policies.

Although no private land development has been proposed for land surrounding the project site, two public service facilities are planned at the northeast corner of the city's irrigated fields.

Caltrans is planning a freeway interchange for 1-5 at the WPCF access road undercrossing (Figure 3-2). The plan provides for a diamond interchange with ramps intersecting the frontage road leading to Thornton Road (Cowell pers. comm.). Existing state right-of-way would be used for the interchange. The city does not use the state's right-of-way for effluent and sludge disposal.

San Joaquin County is planning to construct a fire station adjacent to the proposed freeway interchange. The site is located north of the WPCF access road, between 1-5 and Thornton Road. It is within the city's ownership and would be leased to San Joaquin County. The site is not currently used, or proposed for use, for effluent and sludge disposal. The proposed fire station use would be compatible with freeway interchange traffic movements (Cowell pers. comm.).

Policies for Land Application of Wastewater and Sewage Sludge Affecting Land Use. Some of the regulations of the U. S. Environmental Protection Agency (EPA) and the California Department of Health Services (DHS) governing effluent and sludge disposal on land affect land use. These regulations are listed in Table 5-11. All of these regulations can apparently be met at the project site, but see also the "Water Resources" section above.

Impacts of the Proposed Project

The proposed project consists of reconstructing portions of the treatment plant within the existing plant area and slightly increasing the current effluent and sludge disposal on the city's fields. A change in crops may be necessary to maximize nitrogen uptake. These land use changes would be less than significant.

The project generally would not conflict with the surrounding agricultural uses, although odors from cleaning of the sludge lagoons during construction may temporarily affect the nearest residents, as discussed in the "Air Quality" section. The project would involve the continuance of effluent and sludge disposal within 500 feet of an existing residence and domestic welt. This situation is not compatible with DHS guidelines.

Although a freeway interchange and a fire station are planned on a site immediately adjacent to the effluent and sludge disposal area, these uses

Table 5-10. Consistency of Project with Policies and Principles of San Joaquin County and City of Lodi General Plans

Policy	Consistency
City of Lodi Open Space and Conservation Element	
Policies for Agricultural Land	
Promote the protection of agriculture and agriculturally oriented activities from all practices that erode their economic viability.	Consistent. Proposed project would continue agricultural uses of the site.
San Joaquin County Land Use and Circulation Element	
Agricultural Principles	
The resources on which agriculture is based will be protected for agricultural purposes, and the utilization of these resources will be encouraged.	Consistent. Proposed project would continue agricultural uses of the site and slightly increase productivity to reach the site's production capacity.
Natural Resource Principles	
The waterways of the county will be protected by adhering to water quality standards, supporting programs to improve water quality, preventing overuse and misuse, and retaining riparian vegetation along the waterways.	Consistent. The project must meet state and federal regulations regarding effluent discharges into waterways. No riparian vegetation will be removed. See also "Water Resources" section.
Development and other actions that will adversely affect the waterways and associated resources, particularly the unique environment of the Delta, will be prohibited.	Consistent. See above.

Table 5-11. Federal and State Regulations and Recommendations for Land Application of Wastewater and Sewage Sludge Affecting Land Use

Regulations

Federal - EPA

- Sludge application rates shall be limited to prevent excessive concentrations of cadmium, other heavy metals, and PCBs.
- Sludge application shall not degrade any surface water or contaminate any underground drinking water source.
- Discharge of reclaimed wastewater (domestic and industrial) into surface waters or surface water drainage courses is prohibited.
- The discharge shall remain in the designated disposal area at all times.
- Areas irrigated with domestic wastewater shall have a resting period of at least 30 days before storm runoff from these areas can be discharged into surface waters or surface water drainage courses. Storm runoff within the 30-day resting period shall be contained in collection systems and/or storage ponds.

State - DHS

- Soil-sludge mixture pH must be kept at more than 6.5 to minimize cadmium uptake by food crops unless the cadmium concentration is 2 mg/kg (dry weight) or less.
- The sludge should be incorporated into the soil to reduce the effect of PCBS.
- Sludge should not be applied directly to any food chain crop, except hay on properly cropped pastures.
- Planting of unprocessed food crops should be prevented for 3 years or more.
- Crazing by animals whose products are consumed by humans should be prevented for 1 month.
- Grazing by milking animals should be prevented for at least 12 months if milk is to be pasteurized and should not be allowed if milk is not to be pasteurized.
- Public access should be prevented for 12 months.

Table 5-11. [Continued)

Recommendations of DHS

- **The distance to domestic water supply wells and private residences should be at least 500 feet.**
- **Groundwater depth should be adequate.**
- **Provisions should be made for adequate disposal of surface runoff.**

would not reduce the city's acreage available for effluent and sludge disposal. However, county employees residing at the fire station would be working within 100 feet of effluent arid sludge irrigated alfalfa fields to the south (Figures 3-2, 3-4). As such, this situation might be considered incompatible with the DHS guideline calling for 500-foot separation between sludge disposal areas and private residences. Due to the substantial differences in the nature of site occupancy between a fire station and a private residence, this possible incompatibility is considered a less-than-significant effect of the proposed project. However, possible health implications of this issue are described in the "Public Health and Safety" section.

Mitigation Measures

fn the absence of anticipated significant land use impacts, no mitigation measures are needed.

Impacts of the Project Alternatives

Significant Impacts Reduced. Significant land use impacts are not anticipated from the proposed project.

Other Impacts Caused. None of the alternatives would result in significant, long-term changes in land use. As with the proposed project, all permanent facilities would be located near existing facilities. The major land use impacts under Alternatives E2 and S would involve a permanent commitment of land to agricultural uses and certain suitable crops.

Alternative El. This alternative involves effluent disposal into surface waters whenever the effluent meets 10/10 treatment criteria. Wastewater flows would be diverted to or stored for land disposal only about 12 days per year, compared to 60 days per year under the proposed project. Thus, nutrient application would be 20 percent of the proposed project. The agriculture productivity in the short term would therefore diminish substantially, but reduced heavy metal buildup would extend site availability greatly. See the "Soils" section above.

Alternative E2. This alternative involves the use of 305 additional acres in the project vicinity for effluent and sludge disposal. This land would be purchased by the city, and the present crops would be replaced with alfalfa and corn. Cropping options would be reduced. Because the land would remain in productive agricultural use, the impact would be less than significant. The following beneficial impacts also would occur:

- addition of trace elements to the soil and nutrients to crops, reducing the need for other fertilizer;
- availability of fresh irrigation water for other users, as wastewater replaces freshwater for site irrigation; and
- long-term commitment of land to agricultural uses.

Alternative S. This alternative would utilize 200-1,000 acres of suitable agricultural land within the sludge disposal study area (Figure 4-1) for offsite sludge application. Because this study area is approximately 20,500 acres, only 1-5 percent is needed for disposal, depending on the type of crop grown. Certain crops, such as corn and alfalfa, utilize nitrogen faster and thus can make use of more sludge.

Vineyards and orchards cannot be considered as sites for sludge disposal due to operational difficulties in application. Dairies and lands supporting crops that will not be processed before human consumption also are excluded for health reasons. The state regulations listed in Table 5-11 could eliminate parcels that would otherwise be considered for disposal, unless the farmer is willing to change crops.

Benefits of this alternative would be:

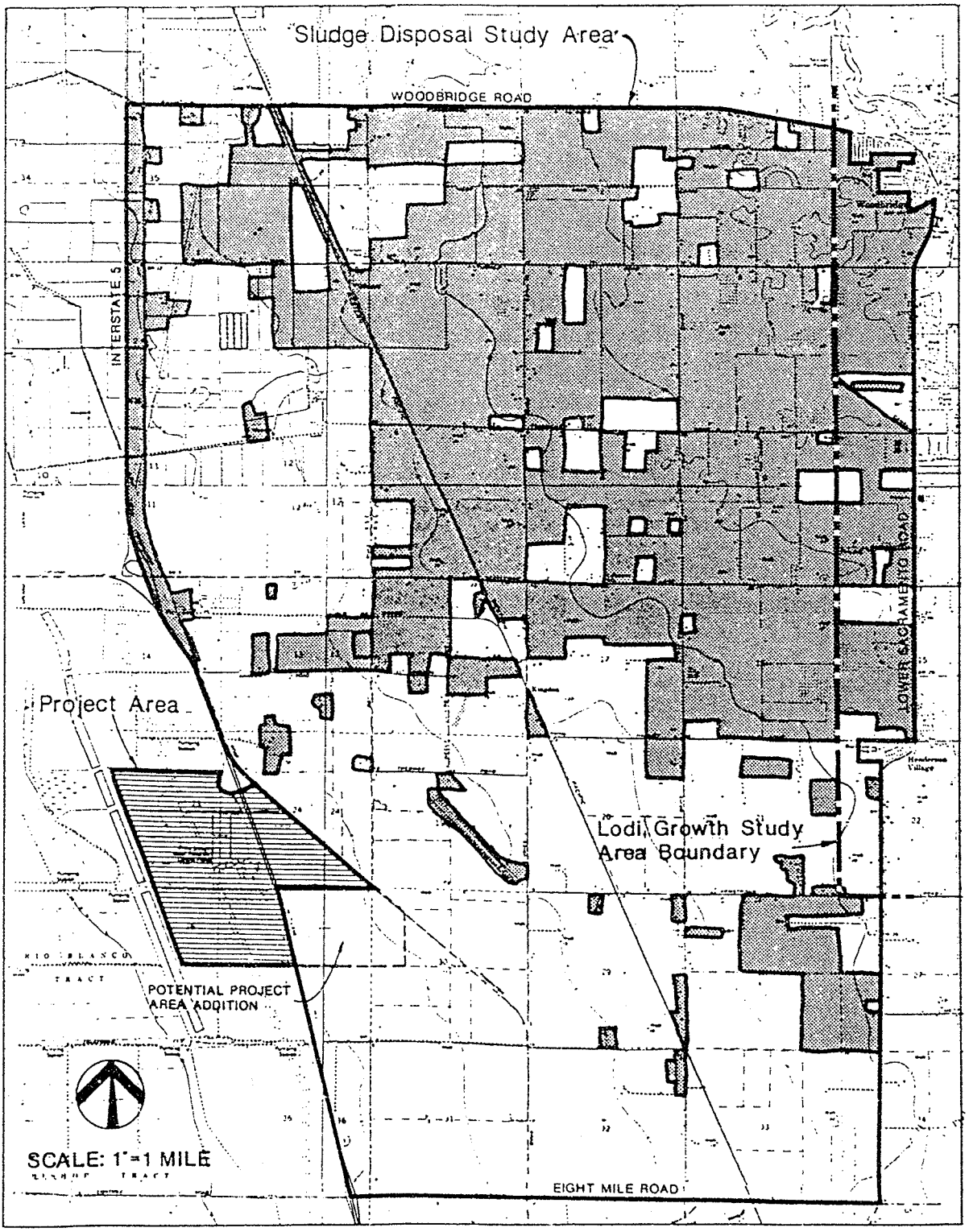
- addition of trace elements to the soil and nutrients to crops, reducing or eliminating fertilizer use; and
- long-term commitment of land to agricultural uses.

The site suitability analysis of the sludge disposal study area, as shown in Figure 5-8 of this section and Figure 5-3 of the "Soils" section, indicates that approximately 7,200 acres in the study area are suitable for sludge disposal, with approximately 3,200 acres potentially suitable, depending on soil acidity. Since only 200-1,000 acres would be required, Alternative S is judged to be a feasible alternative. Adverse impacts to water quality and public health could be avoided by applying sludge only to lands shown suitable in both Figures 5-3 and 5-8 and adhering to the regulations and recommendations listed in Table 5-11.

Beneficial effects of increased site productivity with reduced fertilizer costs could be offset by the loss of cropping flexibility. In some instances, the owner would be limited to growing crops allowed by health regulations for as long as the parcel served as a disposal site. Due to the land preparation that each disposal site must undergo, a long-term commitment must be sought by the city. Thus, farmers would forego some opportunities to change crops in the future in response to changing market opportunities.

The city could minimize the risk to farmers several ways:

- purchasing parcels for sludge disposal, and thus eliminating risks to private individuals;
- agreeing to price supports, or essentially subsidizing farmers for any potential loss of income as a result of land use; or
- setting lease prices high enough to cover any potential losses.



LEGEND

Lands unsuitable for sludge application (vineyards, orchards, and dairies)

Lands possibly suitable for sludge application

FIGURE 5-8. EXISTING AGRICULTURAL USES SUITABLE FOR SLUDGE DISPOSAL

Source of agricultural use data: California Department of Water Resources 1982

Solid Waste Disposal

Setting. Currently, the WPCF does not generate any sludge requiring disposal at a solid waste disposal site.

Impacts. The proposed project entails disposal of all existing sludge at a landfill site to allow reconstruction of the WPCF sludge handling system. In the future, sludge would be regularly applied to the city's agricultural lands, except during occasional periods when heavy metal concentrations were too high for agricultural use. During these unexpected periods, disposal at an appropriate landfill would be needed.

The existing sludge currently is in semi-liquid form with 16 percent solids and cannot be disposed of at a Class III landfill unless its moisture content is less than 50 percent. To reduce the moisture content, the sludge would be applied to fields adjacent to the lagoons and dried by turning the material from time to time. It would then be loaded in dump trucks for hauling to the landfill. The sludge has recently been tested by the "WET" test and is not a "hazardous waste" according to provisions of Subchapter 15 of Title 23 of the California Administrative Code and the federal Resource Conservation and Recovery Act, another requirement for disposal at a Class III landfill (Jones pers. comm.).

The amount of sludge put out to dry would consist of 13,000 wet tons. When dried to 50 percent solids, the solids content would be 2,080 tons and liquid content would be 2,080 tons. This amount would total 4,370 cubic yards (CY), requiring 290 loaded truck trips to the landfill site. Assuming 40 trips per day, the hauling duration would be over a period of 7-8 days.

The nearest Class III landfill is San Joaquin County's Harney Lane site east of Lodi. The landfill has capacity to accept the identified volume of material (Horton pers. comm.), and is therefore the proposed disposal site.

Because the sludge has been determined to be nonhazardous, the moisture content can be reduced to the required 50 percent, and the appropriate landfill site has adequate capacity, the impact of landfilling the existing sludge is considered less than significant.

Occasional landfilling of sludge high in heavy metals or other toxic substances would require chemical testing to determine the required landfill class for disposal. Disposal at a Class I or II site might at times be required if tests reveal a hazardous or "designated" waste. Due to the expected infrequency of these sludge diversion episodes, this impact on solid waste disposal systems also is considered less than significant.

Mitigation Measures. None are required.

Impacts of the Alternatives

Significant Impacts Reduced. The proposed project entails no significant solid waste disposal impacts.

Other Impacts Caused. The project alternatives would not generate other impacts on the county's solid waste disposal system.

Road System

Setting

Existing Roadway Network. The White Slough WPCF is located on the west side of 1-5, south of SR 12 interchange-at the North 1-5 Frontage Road/Thornton Road undercrossing. Figure 5-9 shows the roadways in the immediate project vicinity. Land uses adjacent to roadways in the project vicinity are dominated by agriculture.

1-5 is a six-lane, divided, grade-separated freeway. It runs parallel to SR 99, and together they provide regional access to Stockton and Sacramento. Interchanges on 1-5 are at SR 12 to the north, and at Eight Mile Road to the south of the WPCF.

SR 12 is a two-lane, major, east-west facility that crosses 1-5 just north of the project site. This facility provides access to Fairfield, Lodi, and eastern San Joaquin County.

Thornton Road is a two-lane, rural roadway that generally runs parallel to and on the east side of 1-5. It is a county road.

The North I-5 Frontage Road runs east-west from Thornton Road, crosses under 1-5, and turns north just past the WPCF entrance way.

On the east side of 1-5, a grid pattern of rural, two-lane roads serves the agricultural community west of Lodi. These are also county roads.

Existing Traffic Conditions. Both 1-5 and SR 12 currently operate under free-flow conditions with little or no congestion. Average daily traffic (ADT) is 26,000 vehicles on 1-5 in the project vicinity (California Department of Transportation 1987). SR 12 carries approximately 9,400-10,700 vehicles per day (California Department of Transportation 1987).

Traffic on the North I-5 Frontage Road is mostly limited to vehicles entering or exiting the White Slough WPCF or accessing peripheral pond or Delta slough waterways. Traffic volumes on Thornton Road are about 7,400 per day. This roadway operates well below its daily capacity. The roadways of the local grid serving agricultural properties carry relatively little traffic.

Daily traffic volumes for these roadways are summarized in Table 5-12.

Existing Roadbed Conditions. The present roadbed conditions of the local county roadways are summarized in Table 5-13. All of the potentially impacted roads are in fair to good condition, with the exception of Ray Road, Harney Lane, and Armstrong Road.

Impacts of the Proposed Project. Possible transportation-related impacts of the proposed treatment plant expansion stern from several sources:

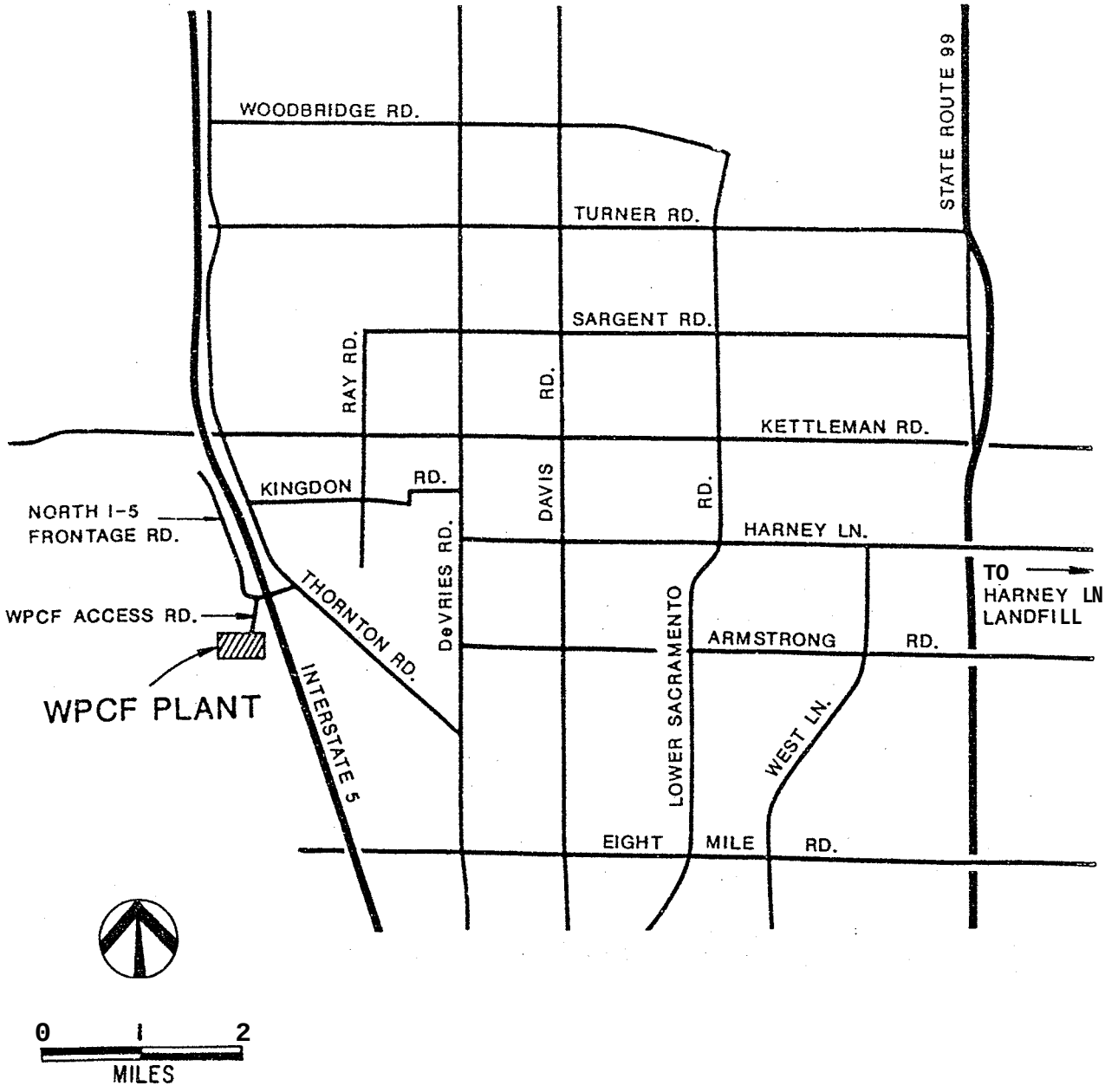


FIGURE 5-9. ROADWAYS IN THE PROJECT VICINITY

Table 5-12. Traffic Volumes on San Joaquin County Roads Near the Project Site

Roadway	Segment	ADT
Thornton Road	Woodbridge Road to Eight Mile Road	7,416
Ray Road	Kingdon Road to Sargent Road	102
DeVries Road	Woodbridge Road to Eight Mile Road	1,325
Davis Road	Woodbridge Road to Eight Mile Road	2,714
Lower Sacramento Road	Woodbridge Road to Eight Mile Road	6,941
Woodbridge Road	I-5 to Lower Sacramento Road	1,534
Turner Road	I-5 to Lower Sacramento Road	2,616
Sargent Road	Ray Road to Lower Sacramento Road	407
Kettleman Lane	I-5 to Lower Sacramento Road	10,700[a]
Harney Lane	DeVries Road to Lower Sacramento Road	1,305
Armstrong Road	DeVries' Road to Lower Sacramento Road	416
Eight Mile Road	I-5 to Lower Sacramento Road	7,477

[a] California Department of Transportation 1987.

Source: San Joaquin County Public Works Department 1987, except as noted.

Table 5-13. Existing Roadbed Conditions

Roadway Name and Limits	Year Constructed	Condition	Comments
Thornton Road (Woodbridge Road to Eight Mile Road)	1958	fair	Surface cracking, rough surface, minor potholing
Ray Road (Kingdon Road to Sargent Road)	1959	fair to poor	Narrow, poor shoulders, subgrade failurer, cracking
DeVries Road (Woodbridge Road to Eight Mile Road)	1960	fair to good	Wide shoulders, surface roughness
Davis Road [Woodbridge Road to Eight Mile Road)	1970–1983	good	Wide shoulders
Lower Sacramento Road (Woodbridge Raad to Eight Mile Road)	1957	fair to good	Localized subgrade failures, cracking
Woodbridge Road (1–5 to Lower Sacramento Road)	1965	fair to good	Subgrsde failures, distortion on western portion
Turner Road (1-5 to Lower Sacramento Road)	no record	good	Narrow shoulders
Sargent Road (Ray Road to Lower Sacramento Road)	1974-1977	good	Narrow shoulders
Kettleman Lane (1-5 to Lower Sacramento Road)	no record	good	SR 12
Harney Lane (DeVries Road to Lower Sacramento Road)	no record	fair to poor	Subgrade failures, cracking
Armstrong Road (DeVries Road to Lower Sacramento Road)	1965	fair	Cracking
Eight Mile Road (1-5 to Lower Sacramento Road)	1969 198 (overlay)	excellent	Graveled shoulders
North 1-5 to Frontage Road	1976	good	None

Source: San Joaquin County Public Works Department 1988.

- o removal of the accumulated sludge currently stored in lagoons onsite to a landfill,

- o occasional landfill of sludge if high concentrations of heavy metals are detected, and

- o reconstruction of the irrigation distribution ditch bordering Thornton Road.

Roadbed Impacts. Under the proposed **WPCF** expansion, the sludge currently stored onsite would be disposed of at the county's Harney Lane landfill site, which is located east of **SR** 99 on Harney Lane (Figure 5-9). Hauling 290 truck loads at 40 trips per day would require more than 7 days to complete. It is anticipated that the transport vehicles would be 10-wheeler, three-axle, dump trucks carrying 25-ton loads (Jones pers. comm.). The 40 additional truck trips per day to the landfill site would not significantly impact traffic congestion. However, due to the roadbed composition, Harney Lane between 1-5 and SR 99 is extremely susceptible to damage from the heavy trucks (Solorio pers. comm.). This damage would present safety hazards and require significant repair expenditures. Use of Harney Lane west **of** SR 99 would therefore be considered a potentially significant adverse impact to the county road system.

Disruption of Traffic on Thornton Road. To improve irrigation of the city's agricultural lands, portions of a concrete distribution ditch along Thornton Road would be enlarged. Construction activities would possibly reqcire closure of one lane of traffic white construction work was in progress. This closure would take place in the immediate vicinity of the construction activity and would be temporary. Because of the lack of high traffic volumes on Thornton Road, this impact would be less than significant if flagmen were used as proposed. No other mitigation would be required.

Mitigation Measures. Roadbed damage during sludge hauling could be prevented by avoiding harney Lane, Ray Road, and Armstrong Road. SR 12 is **a** designated truck route and could provide primary east-west access for trucks hauling sludge. Eight Mile Road, Thornton Road, and Lower Sacramento Road also could better withstand heavy truck traffic than some of the other, narrower roads within the area between the **WPCF** and the landfill.

Impacts of the Alternatives

Significant Impacts Reduced. Because potentially significant damage to local roads can be avoided through the mitigation measure described above, the project alternatives offer no roadway impact benefit compared to the proposed project.

Other Impacts Caused. Roadbed impacts under Alternatives El **and** E2 would be the same as for the proposed project, since sludge generation and handling would be unchanged.

Additional roadbed impacts could occur under Alternatives **S.** The agricultural parcels in the sludge disposal study area (Figure 4-1) are connected **by a** network of rural, county roads, some **of** which are very narrow

and susceptible to surface break-up under the pressure of heavy loads (Solorio pers. comm.). Again, this damage would result in unsafe road conditions or in repair costs and would be considered a significant adverse impact.

These roadbed impacts also could be mitigated to less-than-significant levels by avoiding heavy truck trips on Harney Lane between I-5 and SR 99, Ray Road, and Armstrong Road.

If access to a particular parcel of agricultural land is not possible without using these three roads, sludge haulers could drive at slow speeds (30 mph) to reduce bounce and minimize the chance of pavement breakup. San Joaquin County states that county roads damaged by heavy truck traffic should be repaired by the responsible party (Chahal pers. comm.).

Increased traffic volumes on local roads and their effects on traffic flow under Alternatives S would be considered less than significant. The additional traffic generated by the sludge-hauling trucks would be 5-9 trips per day for 2 months in the spring and 2 months in the fall (Jones pers. comm.).

Sludge application to agricultural properties in the study area also could result in mud or sludge on the roadways as sludge-spreading vehicles travel from a field onto a roadway to access another field. The roads could become slippery and unsafe, especially during rainy weather (Chahal pers. comm.). This could be a significant adverse impact, but it could be fully mitigated by hauling field vehicles and keeping haul vehicles off of exposed soils. Direct removal of mud build-up on the roads also could be done.

Air Quality

Setting

The WPCF site is located in the northern part of the San Joaquin Valley. Wind patterns in the Lodi area vary seasonally, but prevailing winds are generally from the west or north.

Most of the San Joaquin Valley experiences occasional air pollution episodes involving photochemical smog and particulate matter. Several urban areas in the valley experience occasional episodes of high carbon monoxide (CO) levels.

Both the State of California and the federal government have established ambient air quality standards for several different pollutants. For some pollutants, separate standards have been set for different time periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values, such as protection of crops, protection of materials, and avoidance of nuisance conditions. The current federal and state ambient air quality standards are summarized in Table 5-14.

Table 5-14. Ambient Air Quality Standards Applicable In California

Pollutant	Symbol	Averaging Time	Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.10	0.12	200	235	if equaled or exceeded	if exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	if exceeded	if exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000		
(Lake Tahoe only)		8 hours	6	---	7,000	---		
Nitrogen dioxide	NO_2	annual average	---	0.05	---	100	if equaled	if exceeded
		1 hour	0.25	---	470	---	or exceeded	
Sulfur dioxide	SO_2	annual average	---	0.03	---	80	if exceeded	if exceeded
		24 hours	0.05	0.14	131	365		if exceeded on more
		1 hour	0.25	---	655	---		than 1 day per year
Hydrogen sulfide	H_2S	1 hour	0.03	---	42	---	if equaled or exceeded	
Vinyl chloride	C_2H_3Cl	24 hours	0.010	---	26	---	if equaled or exceeded	
Particulate matter, 10 microns or less	PM10	annual geometric mean	---	---	30	50	if exceeded	if exceeded
		24 hours	---	---	50	150		if exceeded on more than 1 day per year
Sulfate particles	SO_4	24 hours	---	---	25	---	if equaled or exceeded	
Lead particles	Pb	calendar quarter	---	---	---	1.5	if equaled	if exceeded on more
		30 days	---	---	1.5	---	or exceeded	than 1 day per year

Notes: All standards are based on measurements at 25° C and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
The California 24-hour standard for SO_2 applies only when state O_3 or PM10 standards are being violated concurrently.
In November 1987 the California Air Resources Board adopted a new ozone standard of 0.09 ppm; regulations implementing this standard have not yet been approved by the Office of Administrative Law.

The federal Clean Air Act mandates the establishment of ambient air quality standards and requires jurisdictions in areas where these standards are violated to prepare and implement plans to meet standards by certain deadlines.

Areas that do not meet federal primary air quality standards are designated as "nonattainment" areas. Currently, all of San Joaquin County has a nonattainment designation for ozone and suspended particulate matter. The Stockton urbanized area is designated a nonattainment area for CO.

Several public agencies are responsible for implementing various types of actions related to the air quality plans. The EPA and the California Air Resources Board (ARB) are responsible for setting limits on the amount of emissions motor vehicle engines can produce. The San Joaquin County Air Pollution Control District (APCD) is responsible for limiting the amount of emissions from industrial and other fixed sources of pollutants. Cities, counties, and transit agencies are responsible for land use and transportation measures that reduce the amount of vehicle travel in the region.

Impacts of the Proposed Project

Construction-Related Dust. Construction activities will generate dust from onsite vehicle traffic, demolition of facilities being removed, and site preparation for new construction. The quantity of dust produced by construction activities, however, will not be appreciably greater than that produced by existing agricultural practices in the project vicinity. Consequently, this impact is considered to be less than significant.

Construction-Related Odor Problems. Construction activities will necessitate cleaning of the existing sludge lagoons. The lagoons contain an estimated 13,000 tons of wet, relatively stable sludge (about 16-percent solids), which must be dried to 50-percent solids before being disposed of at the county landfill. The wet sludge removed from the lagoons will be spread for drying on ground near the lagoons. The drying sludge will be mixed periodically to assist the drying process. The sludge drying process has the potential for creating temporary odor emissions, particularly when the drying sludge is being mixed.

The nearest existing homes are about 4,000 feet north and east of the sludge lagoons. Sludge drying operations will occur during summer months, when prevailing winds are from the west and north, and when poor dispersion conditions are limited (occurring occasionally during night and early morning hours). With westerly and southerly winds and limited dispersion conditions, concentrations of odorous compounds at the nearest residential units would be between 8 and 30 percent of the concentration at the sludge drying beds. This amount of dilution may not prevent residents of the nearest homes from occasionally detecting odors from the sludge drying operations. Normal summer patterns of wind and atmospheric stability conditions should, however, preclude the development of persistent odor problems from the sludge drying operations. Thus, this is considered to represent a less-than-significant impact.

Emissions from Construction-Related Traffic. Construction activities will result in a temporary increase in auto and truck traffic to and from the WPCF site. The greatest amount of truck traffic generated by project construction would be that associated with disposal of sludge removed from the existing sludge lagoons. This traffic is described under "Public Services and Facilities - Road System" in this chapter. Detailed estimates of the amount of traffic and the resulting emissions have not been prepared, since the amount of traffic is not expected to be significant in the context of current study area traffic volumes.

Emissions from Facility Operations. Wastewater treatment operations produce a varietv of air pollutant emissions. Volatile emissions (primarily organic cornpounds, ammonia, and sulfides) are released from decomposition processes during most steps of the treatment process. Actual emission rates for different treatment processes, however, are not well defined. Open treatment system components (clarifiers, oxidation ponds, aeration tanks, etc.) have generally not been regulated by local APCDs. Instead, APCD regulations and permit requirements have been focused on conventional industrial equipment (furnaces, boilers, etc.) used at treatment plants.

The proposed project will incorporate an onsite cogeneration system fueled by gas from the anaerobic sludge digesters. This 250-kW system will require a permit from the San Joaquin County APCD. The project engineers have estimated average emissions from this system at 57 pounds per day of nitrogen oxides, 28.6 pounds per day of carbon monoxide, and 28.6 pounds per day of organic compounds (Jones pers. comm.). A cogeneration system with this quantity of emissions will not trigger APCD requirements for best available control technology or for emission offsets.

Digester gas is currently flared for onsite disposal. Additionally, power from the proposed generator will reduce the amount of power currently supplied to the site by Pacific Gas and Electric Company (PGandE), whose power is generated by a mix of fossil-fueled, hydro, and nuclear generators. Consequently, the net change in pollutant emissions resulting from the onsite cogeneration plant will be less than the daily emission estimates presented above. Emissions from the cogeneration plant represent a less-than-significant air quality impact.

Potential for Odor Problems from Facility Operations. All wastewater treatment facilities have the potential for generating occasional instances of unpleasant odors. The distance between treatment Facilities and the nearest residences is sufficient to avoid odor problems during normal treatment facility operations.

Occasional instances of nuisance odors are possible during periods of treatment process upsets. The most common sources of problem odors at wastewater treatment plants are sludge handling and storage facilities. The proposed project will improve the design of clarifiers and sludge processing equipment, thus reducing the potential for problem odors from the treatment plant.

Effluent storage ponds at the WPCF site may become an odor source if major blooms of blue-green algae or actinomycetes develop. Decomposition of these organisms can produce nuisance odors. A variety of intermittent

remedial measures, such as pH adjustment, aeration, recirculation, or chemical oxidation, can be used to correct such problems. Odor from the ponds has not posed a significant problem at the WPCF to date.

Irrigation disposal of effluent should not pose an odor problem if application rates do not exceed those appropriate for crop production.

Overall, the proposed changes at the WPCF will reduce the potential for development of nuisance odor conditions by improving sludge handling and treatment systems. Consequently, the project is considered to have a less-than-significant potential for creating odor problems during facility operation.

Mitigation Measures

No air quality mitigation measures are required, although watering of exposed soils would minimize dust generation.

Impacts of the Project Alternatives

Significant Impacts Reduced. No significant impacts are foreseen from the proposed project.

Other impacts Caused. Alternative S has the potential to create unpleasant odor during two steps in the ongoing offsite sludge disposal process: first, when sludge was thickened, dewatered to 18-percent solids, or dried to 50-percent solids at the plant site, and second, when the sludge was spread on agricultural lands in portions of the study area.

As with the construction-phase lagoon cleaning project of the proposed project, both lagoon dewatering and air drying (for eventual surface spreading) could create temporary but significant odor emissions. However, odors from lagoon dewatering or air drying would be expected to result in a less-than-significant impact due to atmospheric conditions and the distances to the nearest residences. Sludge thickening for eventual subsurface injection would result in fewer odor emissions, comparable to the proposed project. This impact would not be considered potentially significant.

After the spreading of sludge on offsite lands, odors should not be significant beyond the 500-foot buffer to residences recommended by the DHS provided the sludge is injected or mechanically mixed into the soil. These practices should accompany selection of Alternative S.

Noise

Setting

The WPCF site is located in an agricultural area west of I-5. Freeway traffic represents the dominant noise source in the project vicinity.

Impacts of the Proposed Project

Onsite Construction Noise. Equipment used during project construction typically produces noise levels of 85–90 dBA at a distance of 50 feet. Most construction activities will occur on the southern portion of the WPCF site. The closest residences are about 4,000 feet north of the main construction area. Distance attenuation will reduce construction activity noise to less than 55 dBA at these residences. Thus, construction activities would not pose a significant noise impact.

Noise from Construction Traffic. Heavy trucks are often a dominant component of traffic noise. Construction activity will produce a temporary increase in truck traffic in the project vicinity. The magnitude of this truck traffic increase has not been fully estimated. Removal of dried sludge to the county landfill will, however, require an estimated 290 truck loads (Jones pers. comm.). This truck traffic will occur over 7–8 working days, with an average of five truck loads per hour during an 8–hour work day. Consequently, this aspect of project construction would add no more than 10 one–way truck trips in any hour on affected roadways. Since truck traffic will occur during normal daytime hours, this traffic would not represent a significant noise impact.

Noise from Facility Operations. Pumps, aerators, and other mechanical equipment associated with WPCF operations typically generate noise levels of 60–75 dBA at 50 feet. Noise from this equipment generally would not be noticeable at locations off the project site.

Mitigation Measures

No mitigation is required

Impacts of the Project Alternatives

Significant Impacts Reduced. The proposed project entails no significant noise impacts.

Other Impacts Caused. Biannual sludge hauling to nearby agricultural fields under Alternative 5 would involve only five trips per day, occurring during normal working hours. This would not represent a significant noise impact.

Public Health and Safety

Setting

Discharge into Delta Waterways. The WPCF discharges effluent into White Slough via Dredger Cut, located just west of the treatment plant site. Discharges into surface waters pose potential health problems related to bacterial contamination of recreationists and heavy metal accumulation in fish. Both full water contact recreation, especially waterskiing, and casual

contact recreational fishing are popular in the Delta. Both activities are common in White Slough and occasionally occur in Dredger Cut.

Many of the bacteria and viruses present in untreated domestic wastewater are pathogenic. For this reason, the RWQCB has required that WPCF discharged effluent be disinfected to a standard of 23 MPN coliform/100 ml (monthly median). Heavy metal accumulation is countered by maintaining a separate industrial wastewater system and by instituting pre-treatmen? of new and existing industrial discharges to the domestic system.

Dredger Cut is a dead-end waterway that does not dilute pollutants as quickly as more through-flowing waters such as White Slough. The potential for health hazards would be greater here than in through-flowing waterways of the Delta system. As described in the "Water Resources" section, dilution of discharged effluent is complex, depending on rates of irrigation withdrawals, tidal flows, and the balance of Sacramento and San Joaquin River flows. Within Dredger Cut, the dilution component from irrigation withdrawals is 1:6. In the estimated average through-flow of White Slough and Bishop Cut, a 1:10 dilution is provided. Tidal action poses a third dilution component which is significant but difficult to estimate. Total dilution is the product of these varying dilution components.

The DHS is presently evaluating effluent disinfection standards appropriate to beneficial uses of, and dilution afforded by, receiving waters (Ellsworth pers. comm.). The RWQCB's disinfection standard currently in effect for the WPCF (California Regional Water Quality Control Board, Central Valley Region 1986), is now viewed by DHS as appropriate for situations where dilution of the discharged effluent by freshwater streamflow is greater than 100:1 and receiving waters are used for domestic water supply in addition to all forms of recreation. The standard is also appropriate for fresh water streams where dilution is as little as 10:1 but receiving waters are used only for casual contact recreation. These standards are only partially applicable to the Delta waterways, where dilution from through-flowing waters (as the standards assume) is supplemented by diurnal tidal flows and induced inflows from irrigation withdrawals. However, separate dilution standards for Delta waterways have not been proposed to date.

Groundwater Quality. The WPCF discharges effluent and sludge for irrigation of agricultural land onsite and stores effluent in ponds during the nonirrigation season. Although local groundwater is not used for any known domestic water purposes, the potential leaching of nitrates into groundwater underlying storage ponds and irrigated lands is always a concern. Nitrates above certain concentrations can have serious or even fatal health effects. Accordingly, groundwater beneath the site is to be tested quarterly for hazardous constituents, including nitrates. As described in the "Ground Water Resources" section of this report, tests taken in six onsite wells during August 1987 indicated no nitrate pollution of the groundwater below the effluent disposal site (Black & Veatch 1987b).

Contamination of Inhabitants Adjacent to Sludge Disposal. No residences are within 500 feet of the effluent and sludqe disposal fields. Thus, the DHS guideline for separation of these uses is currently satisfied, and it can be assumed that no neighboring residents are subject to a health hazard from undisinfected sludge at the project site.

Vector Proliferation. Vector. proliferation at the WPCF is controlled by the South San Joaquin County Mosquito Abatement District. Mosquitos can reproduce readily in standing, vegetated water, such as the **WPCF** ponds. The **WPCF** presently contracts with the district to control weeds in the ponds and thus keep mosquito populations to a minimum.

Impacts of the Proposed Project

Discharge to Delta Waterways. The annual volume *of* discharged effluent would increase 50-60 percent. If the level of disinfection remained unchanged, some increase in total pathogenic bacteria release should be expected. In terms of dilution **of** effluent, the dilution components described earlier would be reduced to two-thirds of the present dilution components. Nevertheless, the level of bacterial contamination would still remain very low.

Although the change in water quality as described in "Surface Water Resources" is not expected to be significant, the low threshold of acceptable risk associated with human health warrants a conclusion that a significant health hazard for full water contact recreationists could potentially develop in a dead-end channel of Dredger Cut. When irrigation ceases during the low flow season, recommended dilution criteria for this type of activity probably are not met by the tidal action. Unlike White Slough and Bishop Cut, **no** dilution from through-flow occurs.

The combination of tidal action and transfer of Sacramento River water to the San Joaquin River would probably provide sufficient dilution in White Slough and Bishop Cut to allow continued full contact water recreation therein.

Groundwater Quality. Because total irrigation flows would increase only 7 percent and current groundwater nitrate concentrations beneath the site are so low (see "Grcundwater Resources" section), the development of a nitrate problem in area groundwater would not be expected. Although significant nitrogen loading of shallow groundwater could occur if agronomic rates of effluent and sludge disposal were not maintained, the potential for a nitrate accumulation in the deeper water table is considered less than significant.

Contamination of Inhabitants Adjacent to Sludge Disposal. As described in the "Land Use" section, San Joaquin County proposes to build and staff a fire station within **500** feet of the current effluent and sludge disposal fields. In contrast to residential use, the proposed use would not entail children and pet activity in the area of the development. Thus the hazard of bacterial contamination by direct contact with sludge would be considered less than significant.

Reliance upon a well within 500 feet of the sludge application area, in violation of a recommended standard *of* **DHS,** would be considered a potentially significant health hazard if a fire station were developed, as has been proposed. Such a project should be accompanied **by a** mitigation measure of that would require a domestic water well to be located at least 500 feet from the city's disposal fields, even if rights on other lands **must** be secured.

Vector Proliferation. The expansion of the WPCF would not affect the number or size of the wastewater ponds, and thus would have no impact on vector proliferation.

Mitigation Measures

The increased hazard to water contact recreationists on Dredger Cut could be effectively mitigated by increasing the level of disinfection to 2.2 MPN coliform/100 ml (monthly median) or by posting conspicuous warnings to prevent full body contact recreation, including waterskiing and swimming. A special effort in the latter regard should occur at the entrance to Dredger Cut from White Slough.

All other impacts described above are considered less than significant and require no mitigation. However, as noted earlier, subsequent development of a fire station adjacent to the project site should entail water well development no closer than 500 feet from the city's agricultural fields used for effluent and sludge disposal.

Effects of the Project Alternatives

Significant Impacts Reduced. Under Alternative €2, the annual volume of discharged effluent would increase only about 37 percent, posing somewhat less hazard to full water contact recreationists in Dredger Cut than the proposed project. The impact would still be considered potentially significant, however.

Other Impacts Caused. Under Alternative E1, the annual volume of discharged effluent would increase 80 percent. This would further increase the potential hazard to full water contact recreationists in Dredger Cut.

Cultural Resources

Setting

The juncture of the Sacramento-San Joaquin Valleys was inhabited by both the Plains Miwok and the Yokuts. Both of these Native American groups were hunters and gatherers, and the area was abundant with food resources. Consequently, the area supported a large populztion until heavy European contact and epidemics decreased the numbers in the early 1800s.

Numerous Native American sites are located in the Stockton and Lodi vicinity. The entire area is considered "sensitive" because of the current and potential cultural resource sites found in the area (Greathouse pers. comm.).

For the project site, an archeological records search was conducted by E. A. Greathouse of the Central California Information Center, Department of Anthropology, California State University, Turlock. No recorded cultural resource sites are within or adjacent to the city-owned plant site and ir-

rigated lands. One site is located within the boundary of the sludge disposal study area for Alternative S of this report. It is approximately 2.5 miles from the WPCF. Four other recorded sites are located within a 1-mile radius of the sludge disposal study area. All of these cultural resources are described as burial and habitation sites. The identification and study of these cultural artifacts are important in providing information about Native American cultures in the 79th century and earlier.

The city's plant site and irrigated lands, as well as the sludge disposal study area, have apparently not been surveyed intensively for cultural resources. According to Greathouse, however, "there is every possibility that archaeological remains indicative of Native American Indian occupation will be found in the subsurface context of the project area."

Impacts of the Proposed Project

Any ground disturbance could reveal cultural resources present in the subsurface strata. The proximity of documented cultural resource sites suggests that buried remains or artifacts could be present at the project site. The project engineers, however, have advised that the ground in the plant area, where the major improvements are planned, has been graded at least twice (Ewing pers. comm.). This degree of grading makes it unlikely that any cultural artifacts or remains would be unearthed during construction, although the possibility exists. Other soil disturbances during construction would be immediately adjacent to the existing irrigation ditches, where no cultural resource sites were reported during original construction grading.

In light of the previous grading, impacts to cultural resources due to construction on the project site are expected to be less than significant. A possibility remains, however, that cultural items may be unearthed during construction. If this occurs, an impact significance determination and mitigation plan would have to be developed.

Mitigation Measures

Construction activities should cease and a qualified archeologist should be consulted upon discovery of potential cultural resources. Since the area in and around the project site has not been surveyed intensively for cultural resources, it is possible that concealed remains could be exposed during the course of construction. All contractors should be informed of this possibility in writing. In the event that potential cultural resources are discovered, either the prime contractor or project officials should consult a qualified archeologist, the State Office of Historic Preservation in Sacramento, or the Native American Heritage Commission in Sacramento for recommended procedures.

Impacts of the Alternatives

Significant Impacts Reduced. The potential for disturbance of undiscovered cultural resources would be undiminished by adoption of any of the project alternatives.

Other Impacts Caused. Under Alternative S, application of sludge to the surface of soils containing cultural resources might weather or decompose them at an accelerated rate. The rate would depend on the acidity and constituents of the sludge. This degradation could constitute a significant impact, as would direct disturbance of cultural resources during field preparation.

If Alternative S is selected, the archeological site located within the boundaries of Sargent Road to the north, Kettleman Lane to the south, the Union Pacific Railroad to the east, and Ray Road to the west should be avoided. This can be accomplished by either avoiding the 300-acre area bounded by these routes, or avoiding only the exact location of the cultural resources. If the latter method is chosen, the perimeter of a suitably buffered site should be delineated by a qualified archeologist prior to sludge disposal preparations.

If cultural resources are encountered during operations, the mitigation measure of the proposed project should be implemented.

Energy

Setting

The wastewater treatment plant currently uses electricity to drive the treatment process. Since sludge is disposed of along with effluent at the project site, no energy costs for sludge hauling are currently incurred.

Impacts of the Proposed Project

Gas currently being flared at the project site would be used for generation of a small amount of electricity. Increased waterflows would require higher electrical energy costs for pumping and running various types of treatment equipment. These changes would tend to offset energy consumption changes, so the net effect on use of energy resources over the long term is less than significant. Use of waste gas for energy production must be considered environmentally beneficial, however.

In the short term, a less-than-significant energy cost for gasoline or diesel fuel would be incurred by hauling 290 25-ton truckloads of sludge 20 miles to the Harney Lane landfill. This one-time project would be needed to allow cleaning of sludge lagoons prior to construction of the new WPCF plant works.

Mitigation Measures

None are required in the absence of a significant impact.

Impacts of the Project Alternatives

Significant Impacts Reduced. All of the alternatives considered in detail involve the lagoon cleaning project, but the energy costs involved are not considered significant.

Other Impacts Caused. Alternative S would require a significant increase in energy use to transport partially dried sludge to disposal sites on agricultural lands east of 1-5 (the sludge disposal study area) in perpetuity. Hauling in 25-ton trucks would initially require about 610 trips each year, expanding to 770 trips after full utilization of the expanded WPCF, with each trip averaging about 5 miles to an agricultural treatment site. This hauling would occur each spring and fall, and significant amounts of gasoline or diesel fuel would be consumed. This is an unmitigable, unavoidable impact of Alternative S.

Aesthetics and Recreational Environment

"Aesthetics" refers to the visual effects of a landscape that are either pleasing or displeasing to a particular viewer. Different viewers could have substantially different opinions about a landscape. Any assessment of aesthetic qualities is therefore subjective by nature. The following assessment is based on a field survey conducted on February 2, 1988.

Setting

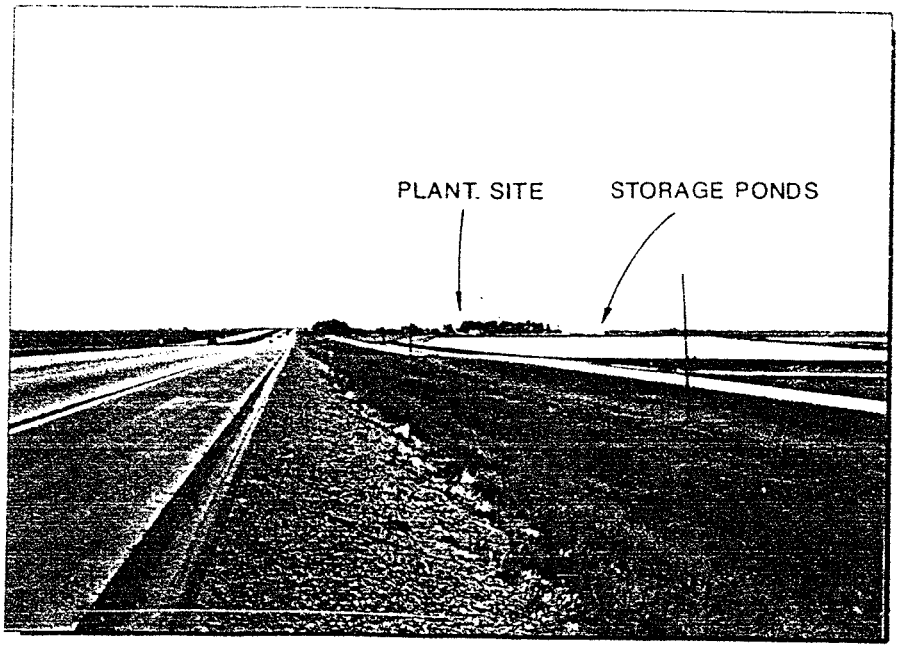
View of Surrounding Area. The view of the area surrounding the project site is one of agricultural fields with scattered agricultural and residential buildings. The visual character is therefore rural, with 1-5 running north to south, adjacent to the project site. On a clear day, the Coast Range and Mount Diablo can be seen in the distance to the west.

View of Project Site. The project site is viewed mainly by motorists traveling south on 1-5. A row of eucalyptus and conifer trees perpendicular to 1-5 is the most visible feature of the project site from a distance (Figure 5-10). As the motorist nears the facility, the treatment ponds and facility structures come into view. A greenscape buffer, consisting of more eucalyptus and conifer trees and grass, partially obscures the view of the facility as the motorist passes it.

Recreation. The area surrounding the project site provides fishing opportunities via the peripheral canal ponds and, to a lesser degree, Dredger Cut and White Slough. (See also "Fisheries.") The rural and open space character of the area contributes aesthetically to this type of recreation.

Impacts of the Proposed Project

Physical Plant Expansion. The major visual alteration of the project site would be the expansion of the physical plant. Of the proposed project components, the two circular clarifiers and the circular digester are of visual concern. They would be constructed of concrete.



A. DISTANT APPROACH

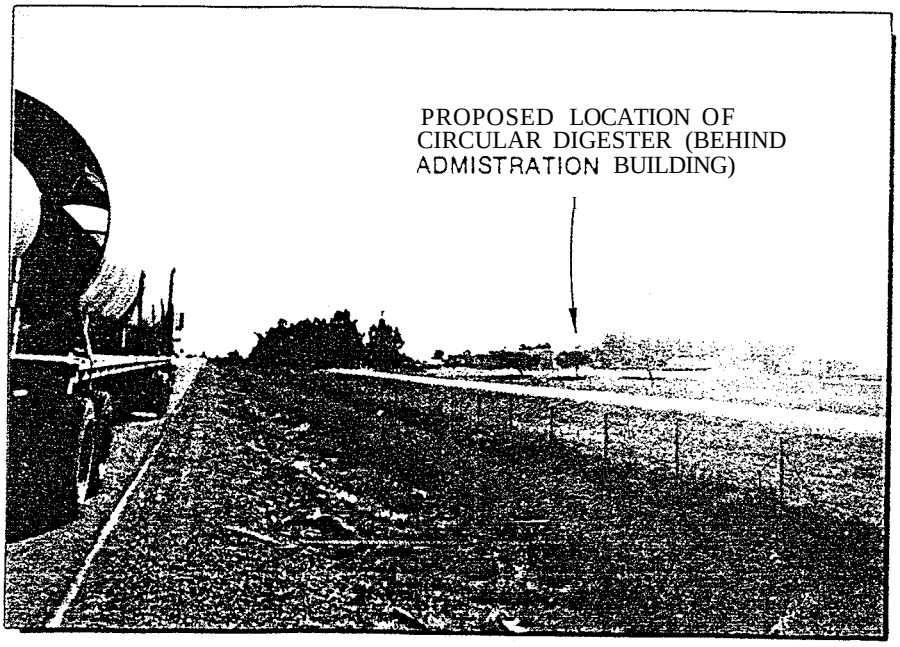


FIGURE 5–10. VIEWS OF THE WPCF **FROM** SOUTHBOUND 1–5

The circular clarifiers, 100 feet in diameter by 15 feet deep, would have only 1 foot of concrete above the ground. These clarifiers would be adjacent to two existing chlorination tanks and would not change the aesthetics of the existing industrial facility. No impact would result, and no mitigation would be necessary.

The circular digester, 50 feet in diameter by 80 feet high, also would be constructed alongside two existing digesters. Sixty-four feet would be above ground, and the top 8 feet would be a 6-foot diameter dome (Jones pers. comm.).

The passing motorist would see the top half of the digester (about 32 feet, including the dome) with the sky or the existing tree canopies in the background. Its color would be chosen by the city at a later date. The digester would be located to the southwest of the existing administration building and therefore would be partially shielded from 1-5 motorists. The impact from construction of the digester would be less than significant regardless of the color it is painted, as it would be a conformable visual element within a partially screened industrial site.

Recreation. The WPCF is not visible to those fishing in the peripheral canal ponds, Dredger Cut, or White Slough. The proposed structures also would not be visible. Therefore, no impacts would result from construction of the project. Intermittent odors could diminish the aesthetic character of the fishing locations, but the predicted impact is considered less than significant. (See also the "Air Quality" section.)

Mitigation Measures

No mitigation would be required, since additions to the physical plant would not significantly alter the existing industrial character of the site and would not be visible to those using the surrounding area for recreation.

Impacts of the Project Alternatives

Significant Impacts Reduced. The proposed project entails no significant aesthetic quality impacts.

Other Impacts Caused. None of the alternatives would cause other aesthetic quality impacts.

Chapter 6

GROWTH-INDUCING IMPACTS

Introduction

The proposed expansion of the White Slough WPCF would remove a major obstacle to growth in Lodi. In this sense, the proposed project would be growth inducing, although the city may exercise control and guidance over growth through its planning functions. Potential impacts of the estimated induced growth are examined in this chapter. Conclusions are summarized in Chapter 2.

Induced Growth Increment

To evaluate in general terms the environmental impacts of growth of the City of Lodi, an estimate of the allowable growth increment due to WPCF expansion must be made. For purposes of this report, it is assumed that the ratio between the total current flow in the domestic system (excluding the current General Mills contribution) to the current city population will remain constant during the increment of growth.

This assumption entails an identical growth rate projection for residential, commercial, and light industrial uses in Lodi. The flow from all of these uses combine to form the current average daily flow of 5.9 **MGD** (or **5.79 MGD** excluding General Mills) (Forkas pers. comm.). The city's population, all of which is served by the domestic system, is currently estimated to be 45,794 persons (Jones & Stokes Associates 1987b). Thus, all of these uses contribute a combined flow of 126.3 gpcpd.

As noted in Chapter 3, the current WPCF capacity is 6.2 MGD (Forkas pers. comm.), which would increase to 8.5 MGD with the expansion. Thus, 0.3-MGD capacity remains available for the city's general growth in the near term, and **2.3** MGD additional capacity would become available after WPCF expansion. Assuming the current combined residential, commercial, and light industrial flows **of 126.3** gpcpd persist in the future, **a** population expansion of about **2,400** can be serviced until the WPCF expansion **is** complete in 1990-1991. Thereafter, a population increment **of** about 18,200 persons could be accommodated. Thus, the growth inducement of WPCF expansion is an allowance for the city's population to grow nearly **40** percent larger than it is now. Table **6-1** summarizes the derivation of this estimate as described above.

Relation to *City* Growth History and Plans

Since 1980, Lodi's population has grown at an average annual rate of 3.8 percent (Jones & Stokes Associates 1987b). Because the proposed WPCF

Table 6-1. Data to Estimate Growth Increment Due to WPCF Expansion

1987 Baseline Data	
Average daily wastewater flow	5.90 MGD
Average daily wastewater flow, excluding General Mills	**5.79** MGD
Population	**45,794** persons
Per capita flow rate	**126.3** gpcd
Existing WPCF Capacity Data	
Average daily wastewater flow capacity	**6.20** MGD
Average daily wastewater flow capacity, excluding General Mills	6.09 MGD
Population serviceable at capacity	**48,179** persons
Population increase from present	**2,385** persons
Percent increase	5.2%
WPCF Expansion Data	
Average daily wastewater flow capacity	**8.50** MGD
Average daily wastewatsr flow capacity, excluding General **Mills**	**8.39** MGD
Population serviceable at capacity	**66,390** persons
Population increase from existing capacity	**18,211** persons
Percent increase in existing population	**39.8%**
Percent increase in existing capacity population	**37.8%**

expansion could not become operational until 1990-1991, however, an average annual growth rate of only 1.5 percent per year could be sustained from 1987 until then. Once the expansion were complete, any growth rate could be accommodated at the WPCF, although faster growth rates would imply shorter periods to full utilization of plant capacity (Table 6-2 and Figure 6-1). If the recent growth rate continued, the new plant capacity would be fully utilized in another 8–9 years.

The 2-percent annual growth rate shown in Table 6-2 and Figure 6-1 represents a maximum growth rate for the future now under consideration by the city council. This growth could be sustained 16–17 years before additional wastewater treatment capacity would be required. If such growth control were implemented, it would be implemented through a residential development allocation system (Jones & Stokes Associates 1987b). Consideration of growth control arises from the expression of the electorate in 1981 (Measure A) that growth should not be allowed to adversely affect surrounding agriculture, scenic values, and wildlife habitats, and that the small city character of Lodi should be retained (Jones & Stokes Associates 1987a).

Land Use Impacts

Land use and other growth impacts of the projected population growth increment due to WPCF expansion are considered in broad terms in the remainder of this chapter. For the most part, growth impacts are quantified but are not made geographic-specific; no attempt is made to predict which properties adjacent to the city would accommodate this growth. If future city policy does not alter the current growth location trends, expansion primarily to the west and south would be expected to continue. Some of the growth increment, however, may involve highway commercial development on lands within the county's jurisdiction that are somewhat remote from the city itself. Appendix B describes such a possibility at a site on Interstate 5 near the WPCF. It should be noted that the current Lodi General Plan Update will soon be accompanied by an environmental impact report addressing the city's growth in geographic-specific terms for several alternative growth scenarios.

Residential Land Use

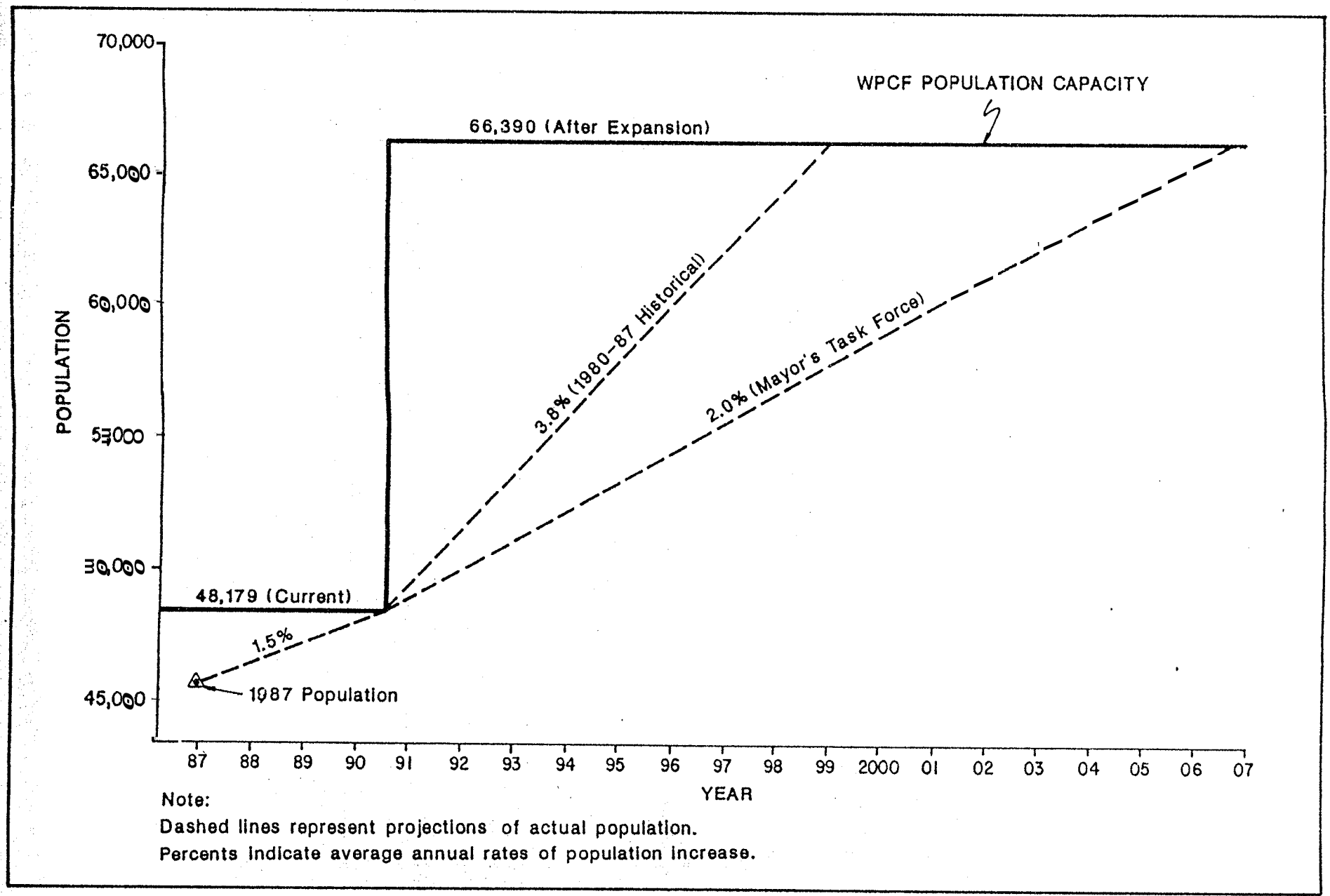
Growth resulting from the expansion of the WPCF would entail conversion of agricultural land uses primarily to residential land uses. Virtually no residential lands are available in Lodi for future growth, and the acreages needed to accommodate the 18,200 people induced by the treatment plant would be existing agricultural land annexed to the city. If the city were to grow with existing population densities and mixes of residential types, more than 940 acres of residentially zoned land would be needed to accommodate the growth increment. Table 6-3 presents the needed acreages by type of residential use.

Commercial and Industrial Land Use

The primary growth assumption of the analysis stated earlier is essentially a projection that the demand for commercial and industrial land would

Table 6-2. Population Growth Accommodated by WPCF Expansion

Future Annual Growth Rate	Plant Life	Year *of* Full Utilization
2% (Recommended by Mayor's Task Force)	16.2 years	2007
3.8% (1980–1987 average)	8.6 years	1999



Note:
Dashed lines represent projections of actual population.
Percents indicate average annual rates of population increase.

Table 6-3. Acreages Required for Growth increment

Land Use	Acreage Needed
Residential	
Single-family	774
Multi-family	100
Other (mobile homes, group homes, etc.)	69
Residential total	943
Commercial	
Office	25
Neighborhood	21
General	61
Community	36
Downtown	7
Commercial total	150
Industrial	
Heavy comrnercial/light industrial	52
Light industrial/warehousing	22
Heavy industrial	126
Industrial total	200
Total	1,294

increase at the same rate as demands for residential land as growth occurs. For a city the size and location of Lodi, this projection is reasonably valid, although a market analysis accompanying the general plan update may subsequently amend this projection. Nevertheless, on this basis, an estimated 150 acres of commercial land and 200 acres of industrial land would be needed. Provision of these acreages also would primarily entail losses of agricultural lands.

These totals represent demands for commercially and industrially zoned--rather than developed--acreages. Presently, 3 percent of the city's commercial acreage and- 8 percent of its industrial acreage are undeveloped. These vacant acreages have not been subtracted from the total acreages in making the projections because they may be needed to assure a competitive marketplace and the availability of a range of parcel sizes and locations as growth occurs.

Conclusion

Nearly 1,300 acres of presently rural land would be needed to satisfy the growth increment allowed by WPCF expansion. The soils on over 90 percent of the lands surrounding Lodi are Considered "prime" agricultural soils (Jones & Stokes Associates 1987b). Most of this acreage is in agricultural production, primarily as vineyards (Jones & Stokes Associates 1987a). Thus, the growth increment would entail a substantial loss of agricultural activity in the Lodi area. This loss is considered an unmitigable or unavoidable significant adverse effect of the project.

Housing and Employment Impacts

Housing

As shown in Table 6-4, more than 6,500 residential units would be needed to accommodate the 18,200-person growth increment. This estimate assumes that the current ratios of single-family units to multi-family and other types of units, and current occupancy rates (persons per unit), will remain unchanged.

The mayor's task force growth management plan includes a goal of 65-percent single-family to a 35-percent multi-family ratio of housing units. This ratio would represent only a slight change from the current mix. If this goal is achieved during the growth increment, an estimated 4,269 single-family units and 2,299 multi-family units would be required. The total number of units needed would remain the same.

Employment

For the purposes of this report, employment is based on number of employees per acre of commercial and Industrial land as estimated in the land use section above. More detailed employment projections will be developed in the market analysis for the city's general plan update. As shown in Table

Table 6-11. **Housing Units Required for Growth Increment**

Housing Type	Persons	Units	Percent of Total Units
Single-family	13,780	4,532	69
Multi-family	4,277	1,967	30
Other (mobile homes, group homes, etc.)	143	69	1
Total	18,200	6,568	100

6-5, more than 6,000 jobs would be generated by the population increase induced by the treatment plant expansion. Commercial jobs would increase by about 4,000, and industrial jobs would increase by more than 2,100.

Conclusion

Expansion of the WPCF would allow a substantial increase in both housing and employment in Lodi. These impacts are significant but are not considered adverse. Mitigation is therefore not required.

Public Service Impacts

Water Supply

The City of Lodi and the majority of the area surrounding Lodi rely on groundwater as their source of domestic water supply. The city provides water to its customers from a series of 18 wells drawing on 150- to 500-foot-deep aquifers. The entire system has a capacity of 42 MGD. New wells are drilled using water utility revenues as additional areas are urbanized.

The city's water system is partially metered. Most of the commercial and industrial users are metered, but residential users are not metered. For this reason, a precise figure for residential water use is not available. The city, however, has estimated consumption using city data and information provided by the City of Stockton, which is fully metered (Jones & Stokes Associates 1988).

Existing water use for the City of Lodi is estimated to be 320 gpcpd or 14.4 MGD total. The expansion of the treatment plant would accommodate approximately 18,200 people who, also consuming 320 gpcpd, would increase the system demand by 5.5 MGD. This supply would require the development of about seven new wells and provision of support equipment and staff.

The "safe yield" of the aquifer serving as the source of the city's water supply has not been determined, primarily due to the variability in recharge from the Mokelumne River. Therefore, it is not known whether adequate capacity exists for long-term reliance on this source as the city grows. While groundwater levels in Lodi lowered significantly during the 1977 drought, they have recovered much of this loss in recent years (Jones & Stokes Associates 1987b).

Drainage Systems

The City of Lodi operates a system of interconnecting storm drainage basins to provide temporary storage for peak storm runoff. The runoff is stored until the water can be pumped into the Woodbridge Irrigation District (WID) Canal or the Mokelumne River at controlled rates and locations. The maximum allowable discharge rate to the WID canal is 80 cfs. As this is only a fraction of the peak storm runoff rate, the excess must be stored in the detention basins.

Table 6-5. Jobs Generated by Population Increase Induced by Plant Expansion

Land Use	Employees Per Acre	Acreage Induced[a] (acres)	Employees Needed
Office	30	24.7	741
Neighborhood commercial	26	20.9	543
General commercial	26	61.6	1,602
Community commercial	26	35.8	331
Downtown commercial	26	7.2	187
Subtotal		150.2 ac	4,004
Heavy commercial/light industrial	20	52.1	1,042
Light industrial/warehouse	7.5	21.7	163
Heavy industrial	7.5	126.7	950
Subtotal		200.5 ac	2,155
TOTAL		350.7 ac	6,159

[a] From Table 5-3, prior to round-off.

Regardless of where growth occurs, new drainage systems, including new detention basins, would have to be built. The number and the capacity of the basins would depend on the density of the growth, proximity to existing development, soil types, and landscaping. However, the per capita volume of these new basins must be substantially higher than those serving the city today, because a proportionate increase in the city's total peak discharge rate is not allowable. Due to site-specific complexities, no attempt has been made to estimate the basin acreages or volumes needed to serve the growth increment.

Maintenance efforts of the city's Street Division staff would have to increase as the city's drainage system expands.

Police Protection

The Lodi Police Department serves the area within the Lodi city limits. The department has 54 sworn officers, 40 patrol officers, and 14 patrol cars. Served by one central dispatch station, the city is divided into seven patrol areas. For the entire city, the average response time is 2.9 minutes.

The city currently has a ratio of 1.02 police officers per 1,000 people. The department goal is 1.5 officers per 1,000 people. To meet that goal, 10 additional officers would be needed.

The addition of 18,200 people would necessitate the hiring of 17-18 new officers to maintain the current level of protection. To meet the departmental goal, the city would need 10 new officers to eliminate the current deficit and another 25-26 new officers to serve the growth increment.

Each new officer hired requires the addition of 0.42 support staff and 0.30 patrol car. The population increase and current deficiency would require the addition of 7-8 support staff and 5-6 patrol cars to maintain the current level of protection. The addition of 25-26 new employees would require expansion of the existing police station or the addition of a new station.

Fire Protection

The Lodi Fire Department employs 1.1 firefighters per 1,000 persons. The addition of 18,200 people would create a demand for 18-19 new firefighters to maintain the current level of protection. A ratio of 1.39 firefighters per 1,000 persons is sought by the department, however. Achieving this ratio would require 13 new firefighters to eliminate the current deficit and 23-24 new firefighters to serve the growth increment. Support equipment and personnel also would be required. A new fire station would probably be needed to house additional staff and to keep response times to an acceptable minimum.

The department estimates the current number of response calls at 26.73 calls per year per 1,000 persons. The population increase would therefore create an estimated 454 additional calls per year.

School System

The Lodi Unified School District is comprised of portions of north Stockton, the City of Lodi, and surrounding areas. Although different student generation rates have been established for various areas of the district, an average of 0.53 student per single-family unit and 0.33 student per multi-family unit are used here to estimate the growth impacts of the treatment plant. Based on the numbers of the various housing types projected earlier [Table 6-4), the growth increment would generate approximately 3,050 students. Based on current age distributions, this student body would consist of 1,739 elementary students, 427 junior high students, 793 high school students, 18 special education students in their own facility, and 73 integrated special education students. This increase would require the provision of 102 permanent or portable classrooms, assuming continuance of the average classroom size of 30 students.

Parks and Recreation

The City of Lodi currently operates 24 park facilities on 282 acres of parkland. These facilities range in size from a 0.2-acre tot lot to a 114-acre regional recreational area that provides swimming, waterskiing, group picnic facilities, and a nature area. Other parks provide softball and baseball diamonds, barbeque pits, tennis courts, and soccer fields.

The city goal for parkland and recreational areas is 5 acres of developed parkland per 1,000 persons. Based on the current population of 44,944, the city has exceeded this goal with a ratio of 6.3 acres per 1,000 people. An additional 18,200 people would increase the total population to 63,632, which results in a total need of 318 park acres. Therefore, the city would need to acquire an additional 36 acres in order to meet the established goal for parkland. The city's recreation staff would also have to increase.

Solid Waste Disposal

Solid waste in the City of Lodi is collected under contract by Sanitary City Disposal, a private company, and deposited at the Harney Lane Sanitary Landfill, located 9 miles east of State Highway 99. The landfill is owned and operated by San Joaquin County. Currently, the landfill receives 250 tons of solid waste per day and is filled to 90 percent of capacity. Capacity is expected to be reached by 1990, or about the date of the WPCF expansion. A future landfill site 2 miles east of the current site has been purchased. It is expected to have a 15-20 year life span, although the lifespan is dependent upon growth rates in Lodi and surrounding areas of the county.

In 1987, the city generated an estimated 58,350 tons of solid waste. Accordingly, the growth increment considered here would result in an increase of about 22,200 tons per year, for a total of more than 80,000 tons per year. This annual waste disposal rate is about 2 percent of the estimated capacity of the new landfill site.

Conclusion

Impacts of the WPCF-induced growth increment on all of the public service systems as described above are substantial. They would be considered significantly adverse only if the requisite expansions of the systems could not be provided or could only be provided with great difficulty. Growth management, which is now being considered in the general plan update process, can avoid or mitigate the financial and operational difficulties inherent in overly rapid expansion of public service systems.

Should the historical annual growth rate of 3.8 percent persist unchecked, however, the WPCF expansion would only serve the growth of wastewater treatment demands for 8-9 years, and difficult demands would be placed on the city for rapid expansion of the other public service facilities. These demands would probably be significantly adverse and generally unmitigable.

Traffic Impacts

Currently, the Lodi city roadway circulation network functions adequately, with nearly all roadways carrying traffic volumes well below capacity. The system can accommodate a moderate amount of growth before major improvements become necessary. The 18,200-person resident population increase allowed by treatment plant expansion would generate about 53,000 daily trips. The trip generation rates and volumes are summarized in Table **6-6.**

Additional traffic might be generated by the increased employment related to commercial and industrial development. To the extent that employers drew from the labor force pool outside Lodi, commuter trips would be added to the residents' trips.

The total growth-induced traffic would not be added to the network at once but would cccur gradually along with development. However, given the magnitude of growth that would be allowed, the overall traffic increase is considered a significant impact.

Roads likely to develop significant traffic congestion first, as development occurs, include:

- Lower Sacramento Road from Harney Lane to Turner Road,
- Century Boulevard from Cherokee Lane to Lower Sacramento Road,
- Cluff Avenue from Turner Road to Kettleman Lane,
- Harney Lane from Lower Sacramento Road to **SR** 99, and
- Guild Road from Turner Road to Kettleman Lane.

The timing and level of improvement **of** these facilities would depend on the type and phasing of future development in Lodi. Improvements needed to reduce congestion on these roadways to less-than-significant levels in-

Table 6-6. Traffic Generated by the Growth Increment

Land Use	Quantity (du)	Dally Trip Rate (trips/du)	ADT	A.M. Peak Hour In Rate (trips/du)	A.M. Peak Hour In Trips	A.M. Peak Hour out Rate (trips/du)	A.M. Peak Hour Out Trips	A.M. Peak Hour Total Trips	P.M. Peak Hour In Rate (trips/du)	P.M. Peak Hour In Trips	P.M. Peak Hour Out Rate (trips/du)	P.M. Peak Hour Out Trips	P.M. Peak Hour Total Trips
Single residential units	4,532	9.1	41,241	0.20	906	0.53	2,402	3,308	0.63	2,855	0.37	1,677	4,532
Multiple residential units	1,967	6.0	11.802	0.10	197	0.40	787	984	0.47	929	0.23	452	1,376
Mobile home units	96	4.8	331	0.13	9	0.38	26	35	0.29	20	0.18	12	32
TOTAL			53,374		1,112		3.215	4,317		3,799		2,141	5,940

Note: du = dwelling unit
ADT = average dally traffic

Source: Trip rates are from the Institute of Transportation Engineers 1983.

clude installation of traffic control devices, such as stop signs and traffic signals, and widening of approaches to critical intersections (Jones & Stokes Associates 1988).

New roads and major roadway improvements within the existing urban area that are likely to be necessary to accommodate the growth increment appear in the city's existing general plan and are shown in Figure 6-2. Outside the existing urban area, additions to or extension of the Lodi circulation network will be needed to provide adequate access to new development as it occurs. The expansion of the road service to accommodate the growth increment without unacceptable congestion will require significant expenditures. Many of these expenditures can be borne by project developers, but significant costs to the city also will materialize. In particular, road system maintenance costs would gradually increase as the road system expands.

Air Quality and Noise Impacts

Air Quality

Traffic associated with the growth increment would contribute to both local and regional air quality problems.

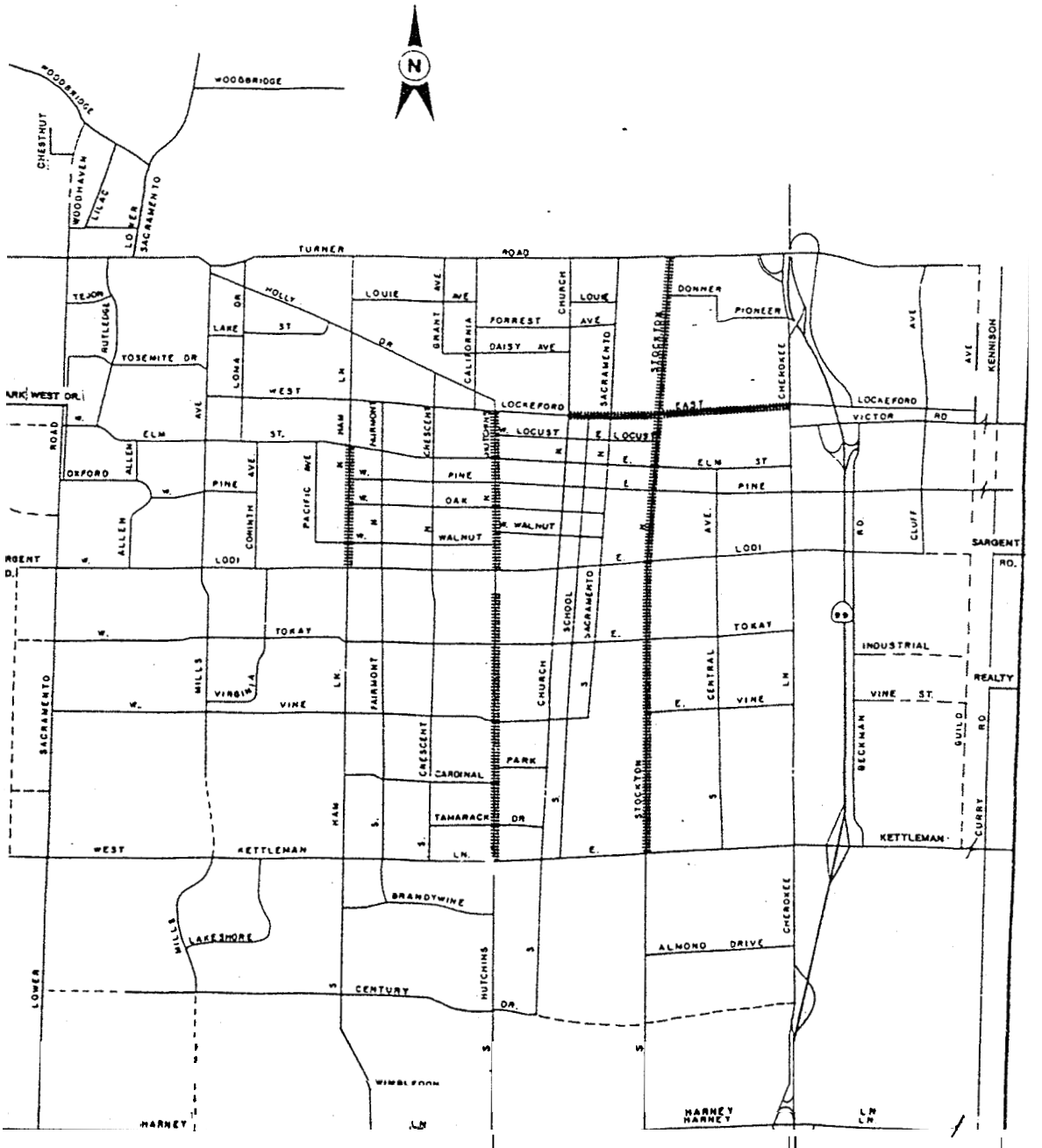
Potential local air quality problems would occur as limited areas of high carbon monoxide concentrations around congested high-volume intersections. The intersection of Kettleman Lane and Hutchins Road is the most probable location for the development of such air quality problems. Future intersection improvements and the future widening of selected roadways (including Hutchins Lane) may relieve traffic congestion sufficiently to avoid local carbon monoxide problems even with a significant increase in local traffic volumes.

Photochemical smog is a regional air quality problem throughout much of California. Ozone is a major component of photochemical smog, and is the most frequently monitored smog-related pollutant. Violations of the federal and state ozone standards occur on several days each summer throughout the San Joaquin Valley. Pollutant emissions from development in the Lodi area are a contributor to current regional ozone problems. Future growth in the Lodi area would contribute additional emissions to this regional problem.

Noise

The major source of noise in the Lodi area is highway traffic. Railroad operations also contribute noise in the central and eastern parts of the city. Additional growth accommodated by treatment plant expansion would result in more highway traffic, but little change is expected in railroad operations.

Traffic noise is dependent on three major factors: total traffic volume, amount of heavy truck traffic, and traffic speed. Traffic noise is more sensitive to changes in traffic speed and the amount of heavy truck traffic than to changes in total traffic volume. If traffic speed and the proportion of heavy truck traffic remain unchanged, traffic noise levels would increase



LEGEND:

- EXISTING
- FUTURE
- FUTURE WIDENING (NOT INCLUDING PARTIALLY DEVELOPED STREETS)

NOTE: FUTURE ROADWAY IMPROVEMENTS ARE BASED ON THE MISTING GP

FUTURE LODI CIRCULATION NETWORK	PREPARED BY JKM	FIGURE 6-2

by about 3 decibels for every doubling of traffic volume (Figure 6-3). A 3-decibel noise increase is generally perceived as a 23 percent increase in loudness.

Traffic associated with new development in the Lodi area would result in generally modest increases in traffic noise for presently developed areas. Large increases in traffic noise would occur primarily in newly developed areas where current traffic volumes are very small. Significant noise increases also may occur for existing development located adjacent to roadways that are widened to accommodate additional traffic.

Biological Resource Impacts

Vegetation and Wildlife

Although it is expected that most of the 1,300 acres of new urban area would be derived from conversion of agricultural lands, significant adverse impacts to important natural habitats and/or special-status plant and animals could result from:

- o eliminating or allowing insufficient buffering of "islands" of natural grassland, wetland, or riparian habitat, including fringes along waterways and agricultural fields;
- o losing farge valley oaks through cutting, soil disturbance within the root zones, or summer watering;
- o increasing recreational use (i.e., foot traffic) in the Lodi Lake Nature Area and other riparian and wetland habitats located within the city's recreation areas; and
- o increasing wave-wash bank erosion generated by increased boat traffic on Lodi Lake, thereby possibly creating a need for bank protection projects that could eliminate important riparian habitats.

The direct effects of urbanization could be rendered less than significant by surveying each proposed development site for the presence of important natural habitats, special-status species and their habitats, and heritage oaks, and by adjusting development plans to assure their preservation. Habitats can be preserved by incorporating them and suitable buffers into undevelopable open space. Oaks can be preserved by excluding construction equipment from beneath their canopies and by educating future landowners about their requirements.

Potentially significant indirect impacts can be prevented by careful design of recreation use areas to prevent concentrating traffic in sensitive habitats. Wave-wash generated bank erosion can be prevented by limiting boat speeds or use.

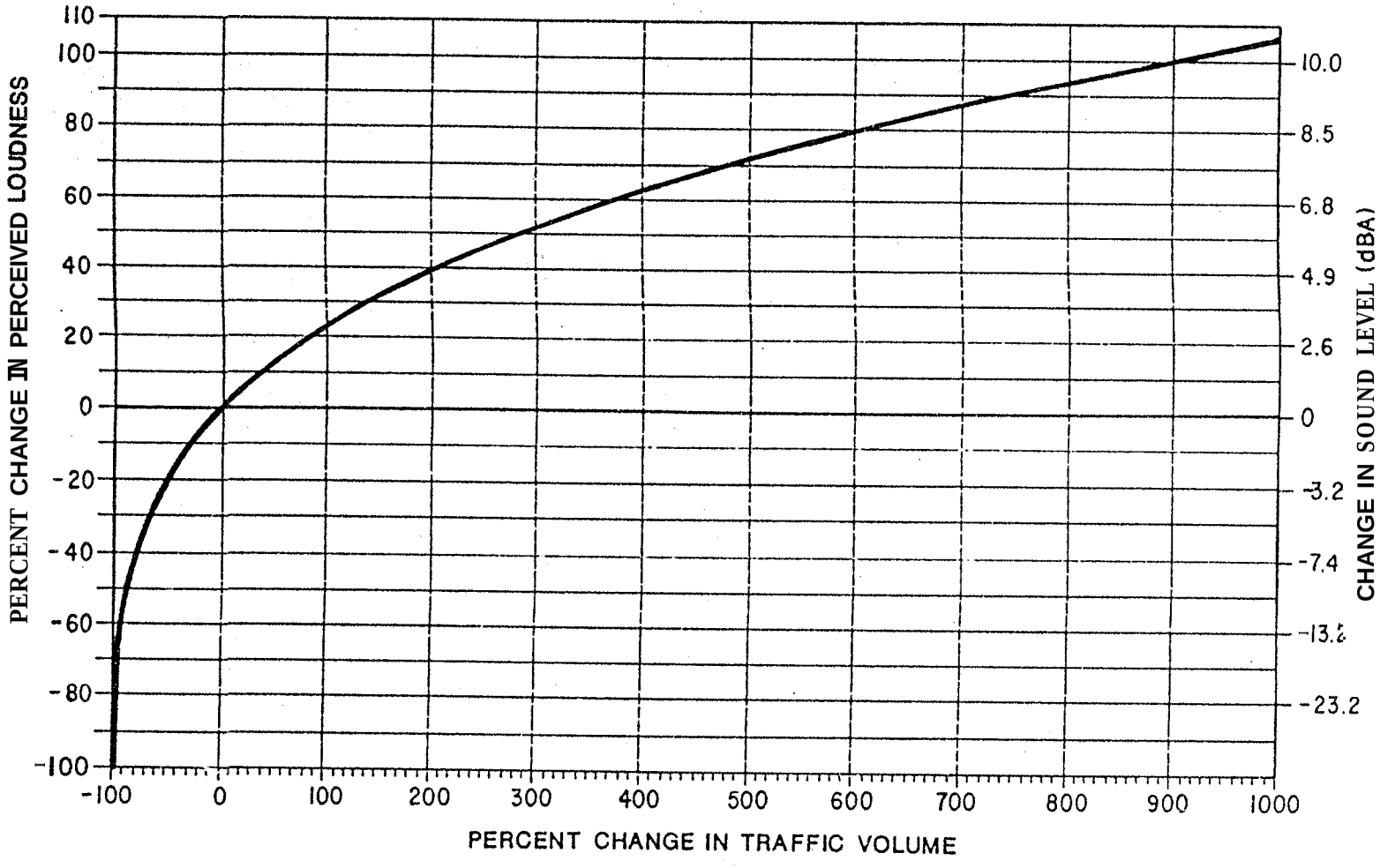


FIGURE 6-3. NOISE IMPACTS OF TRAFFIC VOLUME CHANGES

Fisheries

At least 15-species of fish live in the Mokelumne River where it passes through Lodi (Jones & Stokes Associates 1988). Chinook salmon are the fish of greatest concern on the lower Mokelumne River.- Their principal upstream migration occurs from October through December. Production of salmon in the Mokelumne River is now much less than it was historically, due to flooding and dewatering of habitat, pollution from agricultural and urban runoff, and competition from native and introduced fish. Today, most salmon on the Mokelurnne River spawn in the 5-mile reach between Comanche Dam and Clements. Some spawning occurs in the river at Lodi.

Continued growth of the City of Lodi will increase the volume of urban runoff. Urban runoff may change the chemistry of Mokelumne River water and sediments and increase sediment input. These changes could have an adverse impact on fish through increased direct mortality, habitat loss, and reduced food supply (i.e., change in aquatic invertebrate populations). Chinook salmon would be more susceptible to these impacts than the warmwater fish. Growth of the city also will result in increased fishing activity, which also will increase the mortality of fish populations.

Sedimentation impacts can be reduced to less than significance but not eliminated by use of erosion control measures during construction of new developments. Presently, stream pollution from urban runoff is very difficult to control and should be considered a potentially unavoidable significant adverse effect of the city's growth. Increased fishing could be sufficiently curtailed by state establishment of appropriate bag limits, if such needs arise.

Fiscal Impacts

Growth induced by the project as described above would affect all aspects of Lodi's fiscal structure, including operating budgets, capital improvement budgets, and city utility budgets. Not only would costs increase as the growth-related demand for services increases, but also revenues, with expanding utility sales, user fee revenues, property tax revenues, and sales tax revenues. The significance of the fiscal effects depends on whether growth-related revenues would increase at the same rate as costs.

The location of residential, commercial, and industrial growth is a primary determinant of the magnitude of growth-related public costs, especially for public services and capital improvement costs. Expansion of the WPCF would accommodate an increment of new growth but would not determine its location. Land use designations set forth in the general plan, which is currently being revised, will control the location of future residential, commercial, and industrial growth. A fiscal analysis and financial plan being prepared for the general plan revision will therefore provide a more accurate fiscal impact analysis of the actual growth accommodated by 'the WPCF expansion.

The following fiscal analyses focus on the public services discussed earlier in this "Growth-Inducing Impacts" section. These services include water supply, drainage systems, police protection, fire protection, the

school system, parks and recreation services, and solid waste disposal. Order-of-magnitude projections of incremental operating and capital improvement costs are presented. The reader should be aware that additional location-sensitive capital improvement costs, such as distribution system improvements, have not been included in the projected costs. Existing revenue sources for the public services are identified and qualitatively assessed to determine how funding could be available to match projected costs.

Cost and revenue projections discussed throughout the following sections represent constant 1988 dollars. The effects of inflation, which may increase public costs at a greater rate than public revenues (especially those revenues generated by property taxes), have not been addressed.

Water Supply

Operating Budget. The operation of Lodi's water supply system is financed through the Water Utility Fund. It has a current-year operating budget of approximately $856,000, divided among water production (56 percent), water distribution (15 percent), payments for services provided by the general fund (14 percent), administration (10 percent), engineering (3 percent), fire hydrants (1 percent), and the water conservation program (1 percent!.

The operating costs listed above are all sensitive to the level of demand for water in Lodi. In other words, costs will increase as the demand for water increases. Economies of scale may exist that could change the existing relationship between operating costs and demand; however, a worst-case approach involves an assumption that costs would increase at the same rate as growth-induced demand.

Based on the projection that growth induced by the project would increase water use in Lodi from 14.4 to 19.9 MGD, operating costs are projected to increase from an existing $856,000 to $1.18 million, or an incremental increase of approximately $327,000.

Water Utility Fund revenues are generated primarily by water saies, generating approximately 95 percent of the revenues available to the Water Utility Fund in Fiscal Year (FY) 1987-88 (City of Lodi 1987). Sales revenues also are used to help finance capital improvements through transfers of revenues to the Water Utility-Capital Outlay Fund.

Growth induced by the project would generate substantial new Water Utility Fund revenues through increased water sales. Most, if not ail, of the projected $327,000 increase in operating costs would be offset by the incremental increase in sales fee revenues. If costs exceed revenues, the city council could mitigate the impact by increasing water rates or imposing connection fees, thereby bringing the Water Utility Fund into balance.

Capital Improvements

Water supply system improvements are fi c · l the W Utility l Fund, which is primarily f 1 b 1 es, as discussed above.

The public services analysis earlier in this chapter projected that seven new wells would be required to supply water for project-induced growth. At a cost of $300,000 per well (Jones & Stokes Associates 1987), a projected $2.1 million would be required to construct the wells. Costs of providing additional water storage have not been estimated.

Costs for well construction and other necessary capital improvements would be partially offset by growth-induced increases in water sales. If adequate revenues are not available, the city council would have the authority to mitigate the impact by adjusting water rates or imposing connection fees.

Drainage Systems

Operating Budget. Operation and maintenance of Lodi's storm drainage system is funded through the Department of Public Works operating budget. The FY 1987-88 allocation for storm system engineering and maintenance totaled approximately $101,GOO, which represents less than 4 percent of the public works department's total FY 1987-88 operating budget.

Storm drainage system operation and maintenance costs are primarily affected by the amount of developed land within the city. Development induced by the project wouid generate additional storm drainage and would require an expanded system of collection lines and drainage basins, directly increasing operation and maintenance costs.

Based on approximately 4,100 acres of existing development within the city (1987 Existing Land Use Survey), storm drainage operation costs are approximately $24.60 per acre. The project is predicted to induce the development of an additional 1,200 acres, leading to a projected annual increase of approximately $30,000 in storm system operation and maintenance costs.

Operation and maintenance of the drainage system is funded through the city's general fund. Growth induced by the project would increase revenues available to the general fund through the expansion of the city's sales tax base and property tax base, and it would increase revenues received from other agencies and from charges for a variety of municipal services. The city council has discretion over the allocation of general fund revenues. The city council could mitigate the impact of increased operation and maintenance costs by budgeting a portion of the new revenues for that purpose,

Capital Improvements. Induced development would require expansion of the storm drainage collection system, construction of trunk lines, and construction of drainage retention basins. Expansion of the collection system would be funded by developers as part of normal development improvements. Construction of trunk lines and drainage basins would be funded by fees collected from developers. The city collects two drainage fees for new development. The Master Drainage fee is used to construct trunk lines and basins, and the In-Tract fee is used to provide a partial rebate for developers who have installed storm lines as part of a development.

As discussed earlier in this chapter, the number and capacity of drainage basins and related improvements required by project-induced growth would depend on factors such as the location and density of growth, proximity to existing development, soil types, and landscaping. Therefore, no attempt has been made to estimate capital improvement costs. The city council, however, would have the authority to adjust developer fees to offset any funding shortfalls.

Police Services

Operating Budget. The police department's $4.2 million FY 1987-88 operating budget supports the provision of all police protective services and additional programs such as the community crime resistance program and the city animal shelter. Growth induced by the project would require the police department *to* employ additional personnel and equipment in order to maintain existing service levels.

Police department personnel and vehicle requirements for maintaining existing service levels were discussed earlier in this chapter. Salaries and fringe benefits currently average about $42,000 for police officers (Pruss pers. comm.) and an estimated $30,000 for support personnel. In addition, cost per employee for administrative overhead (in-house operating expenses] was estimated to be 15 percent of salary. Overhead costs for patrol vehicles (including gas, maintenance, and depreciation) were estimated to be $4,200 per vehicle. Based on these costs, growth induced by the project would generate additional annual costs to the department of approximately $1.2 million.

The police department budget is supported by general fund revenues. As discussed previously, revenues available to the general fund would increase with growth *of* the city. To mitigate for impacts to the police department, the city council could budget a portion of new revenues to offset additional costs.

Capital Improvements. The addition of a projected *26* new employees would require the expansion of the existing police station or the addition of a new station. No cost has been estimated for new facilities since the required size and location *of* new facilities is unknown. The city finances nonutility capital improvements through the Capital Outlay Reserve, which is funded through periodic transfers from the general fund. The level of funding for the Capital Outlay Reserve depends on pending improvements identified in the city's 5-year capital improvements program. The fiscal analysis and financial plan that will be prepared in conjunction with the city's general plan update will address facilities needs in detail.

Fire Protection Services

Operating Budget. The fire department has a current-year operating budget of approximately $2.3 million. Approximately 93 percent is budgeted for personnel services. Growth induced by the project would require a projected 19 new firefighters to maintain current protection levels. Based on average salary and benefit costs of approximately $37,600 per firefighter

(Pruss pers. comm.) and estimated administrative overhead equalling 15 percent of salary, the staffing additions would increase annual fire department costs by approximately **$822,000.**

Similar to the police department, the fire department is funded through the general fund. The impact **of** cost increases to the fire department could be mitigated by an allocation of discretionary general fund revenues.

Capital Improvements. Growth induced by the project would require at least one additional fire station. The location and size of the facilities required by the projected growth is unknown; however, the current cost of constructing a fire station is estimated to be $486,000 (City of Lodi Fire Department 1987). Additional expenditures would be required to outfit the station with fire trucks and other equipment. Similar to police department financing, funds for fire department capital improvements would have to be made available, as needed, through the Capital Outlay Reserve fund. These needs will be addressed in the financial plan that will prepared in conjunction with the city's general plan update.

Parks and Recreation

Operating Budget. The parks and recreation department provides services and facilities through two divisions, the recreation division and the parks division.

The recreation division oversees a variety of recreation programs, including activities at Lake Park, local pools and playgrounds; basketball, baseball, and softball programs; and miscellaneous indoor and outdoor activities. The recreation division budget must increase with population increases in order to maintain existing levels of services. Based on current per-capita costs of approximately $12.95, growth induced by the project would increase recreation division costs by a projected $221,000.

The parks division operates and maintains the city's **282** acres of parkland. The parks division's budget is sensitive primarily to the amount ***of*** parkland that must be maintained. Based on current annual per-acre costs **of** approximately $3,600 and the city's goal of providing 5 acres of parkland per **1,000** people, growth induced by the project would increase park division costs by a projected **$308,000.**

Total incremental costs to the parks and recreation department of growth induced by the project is projected to be $529,000. The parks and recreation department ***is*** funded through general fund revenues, including revenues from charges for recreation activities. To mitigate the impact of cost increases to the parks and recreation department, the city council could allocate discretionary general fund revenues. The city council also could impose or increase fees charged for park and recreation programs and services to help offset cost increases.

Capital improvements. Capital improvement expenditures required by induced growth would include parkland acquisition costs **and** park **development** costs. The acquisition *of* new parkland ***is*** financed largely by the public works department through master storm drainage acreage fees. De-

velopers are assessed a per-acre fee for newly developed or redeveloped lands. Through this program, new parkiands double as storm retention basins during winter months.

The master drainage fee would not cover needed park facilities and improvements required by growth induced by the project; it would cover only parkland acquisition and basic development costs. Funds required for further improvements would have to be made available, as needed, through the Capital Outlay Reserve fund.

Solid Waste

Operating Budqet. The collection and disposal of solid waste in Lodi is managed through a contract with a private company, Sanitary City Disposal. The city pays for this service with funds generated by charges for refuse collection.

Growth induced by the project would increase the cost of the refuse collection and disposal contract; however, the induced growth also would generate additional collection revenues. To mitigate potential refuse collection funding shortfalls, the city council could increase refuse collection charges.

Capital Improvements. The disposal of solid waste generated by project-induced growth would require additional landfill capacity. Currently, the city's solid waste is deposited at a landfill owned and operated by San Joaquin County. Costs to the county of providing additional landfill space would be passed along to the city's disposal contractor in the form of increased dumping fees, which would result in increased disposal service costs to the city. If waste disposal revenues generated by induced development do not cover potential cost increases, the city council could mitigate the fiscal impact by increasing refuse collection charges.

School System

Operating Budqet. The Lodi Unified School District (LUSD) serves the City of Lodi, as well as portions of north Stockton and San Joaquin County. LUSD's FY 1987-88 operating budget of approximately $75.9 million supports a current districtwide enrollment of 21,379 students (Starr pers. comm.). This budget includes all sources of revenue used to maintain the district's general fund, excluding federal grants and other special purpose funds.

Based on the above budget and enrollment figures, LUSD currently incurs operating costs of approximately $3,500 per year per enrolled pupil. Projected growth induced by the project would generate an additional 3,050 students. Based on current per-student costs, the additional students would increase LUSD's annual operating costs by approximately $10.7 million.

LUSD's general fund is financed with property tax revenues, state aid apportionment funds, and other state and federal funds. Growth induced by the project would increase property tax revenues available to the district and would increase enroliment-related state and federal funds, such as state

aid apportionment funds. Since the future avaiiability and adequacy of state and federal funds is not known, LUSD's ability to offset the projected increase in operating costs is speculative and beyond the scope *of* this analysis.

Capital improvements. Facility costs vary depending upon the type of facility being considered. Based on actual costs of school construction projects, elementary schools (K-6) cost approximately **$6,000** per student, junior high schools (7-8) approximately 58,400 per student, high schools (9-12) approximately $10,000 per student, and facilities required by special education students approximately $40,000 per student (Starr pers. comm.).

If the current distribution of enrollment **by** age remains unchanged during the growth increment, the cost of facilities required by project-induced growth of 3,050 students would be approximately $23.2 million. This cost projection includes the entire school plant and required land but does not include the cost of additional support facilities.

LUSD currently finances new school construction entirety through funding provided by the State of California under the Leroy **F.** Greene School Building Lease Purchase Law of 1976. According to LUSD (Starr pers. comm.), the state program no longer provides adequate funds to cover the actual cost of total school construction, falling short of the funds required to complete playgrounds, landscaping, street work, and utility and offsite improvements.

Recent legislation has changed the future financing of school construction. AB **2926** (Stirling) allows districts to levy a development fee **of $1.50** per square foot on residential property and **80.25** per square foot on industrial and commercial property. Districts can use the fee revenues to provide interim school facilities (usually portable classrooms), or they can apply the revenues toward the construction of permanent facilities, with additional funds provided by the state.

LUSD currently applies most **of** its developer fee revenues toward interim facilities and expects to continue this practice in the future (Starr pers. comm.). Growth induced by the project would generate substantial future develcper **fee** revenues that could **be** applied toward permanent facilities. **The** district, however, feels that state matching funds will be inadequate to cover all costs required by new growth. To mitigate the impact of the potential funding shortfall, the district intends to explore special assessment districts, including districts allowed under the Mello-Roos Community Facilities Act **of 1982.**

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Chapter 8

REPORT **PREPARERS**

This environmental impact report was prepared by Jones & Stokes Associates (JSA) under contract to the City of Lodi. JSA staff **who** participated in the project are as follows:

Professional Staff

Charles Hazel - Principal-in-charge; water quality

Mike Rushton - Project manager; water quality

Ken Casaday - Project coordinator; soils, flood hazards, groundwater quality, public health and safety, energy, project description and alternatives, summary

Jim Jokerst - botanical resources

Ted Beedy - wildlife resources

Erin Maclean - land use, public services, public health and safety

Jan Parker - cultural resources, aesthetics

Roger Trott - fiscal impacts

Christy Rogers - traffic and road system analyses

Bob Sculley - air quality and noise

Warren Shaul - fisheries resources

Production Staff

Vicki Axiaq - production manager

Jim Merk - editing

Tony Rypich - graphic preparation

Janet Bince-Lambros - report production

Appendix A

NOTICE OF PREPARATION AND INITIAL STUDY

CITY OF LODI

CITY HALL, 221 WEST PINE STREET
CALL BOX 3006
LODI, CALIFORNIA 95241-1910
(209)334-5634

DATE: July 13, 1987

TO: All Interested Persons

FROM: James B. Schroeder, Environmental Review Officer

SUBJECT: Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the City of Lodi White Slough Water Pollution Control Facility Expansion

The City of Lodi is the lead agency for the preparation of an Environmental Impact Report (EIR) on the White Slough Water Pollution Control Facility project. The city is interested in your concerns regarding the project, and is requesting comments pursuant to state California Environmental Quality Act (CEQA) Guidelines, Section 15082.

Staff has prepared a project description, an identification of alternatives, an initial environmental study, and a preliminary outline addressing the scope and content of the EIR (Attachments A, B, and C). We would appreciate receiving your comments on additional issues that should be addressed in the Draft EIR. Please forward any comments or suggestions to the city at the above address no later than August 13, **1987.**

The EIR consultant, Jones & Stokes Associates, may contact Notice of Preparation (NOP) respondents for assistance in preparing the Draft EIR. The city would appreciate the respondent's cooperation with the EIR consultant.

Please contact Mr. Jack Ronsko, Director of the Department of Public Works at **209/333-6706,** if you have any questions.

Enclosure

Attachment A

PROJECT DESCRIPTION

Location

The City of Lodi is located at the juncture of the Sacramento and San Joaquin Valleys, about 50 miles east of the Carquinez Strait and 25 miles west of the Sierra Nevada foothills. Situated between Sacramento and Stockton on State Highway 99, it is the northernmost city of San Joaquin County (see Figure A-1).

The City of Lodi's White Slough Water Pollution Control Facility is located 6.5 miles west-southwest of the central city, or about 4.5 miles beyond the present city limits. This site is about 2 miles east of White Slough, a component of the eastern portion of the San Joaquin-Sacramento River Delta System (see Figure A-2). The proposed expansion would be within and adjacent to the existing plant.

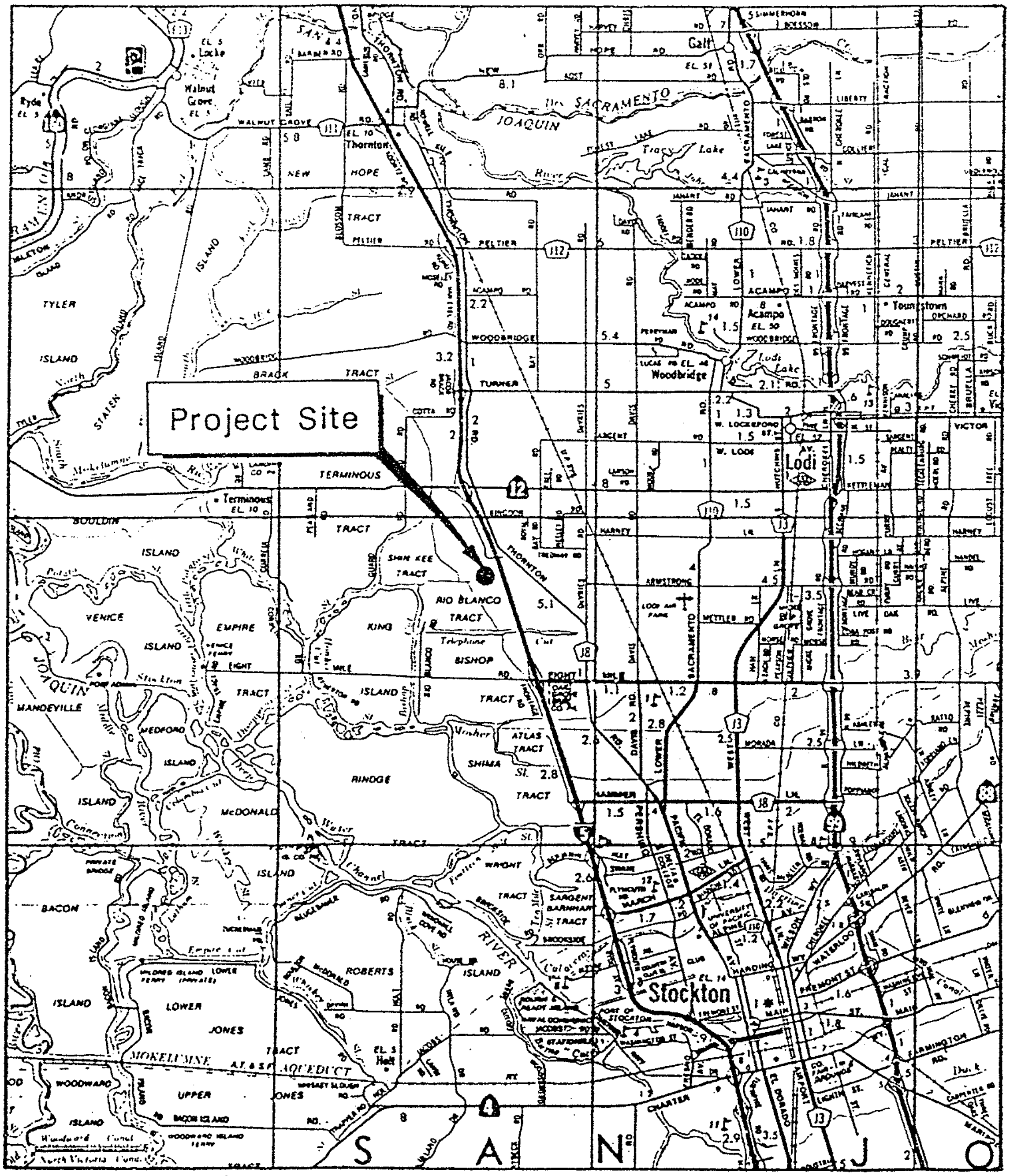
Project Characteristics

Existing Facility

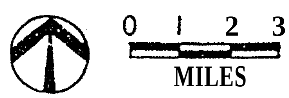
The existing water pollution control facility consists of an activated sludge system having 5.8 million gallons per day (MGD) capacity for domestic wastes and an aerated lagoon and storage pond system of 3.75 MGD capacity for industrial wastes. Treated industrial effluent and 18 percent of the treated domestic effluent are used for irrigation of an adjacent 665 acres of city-owned agricultural land (see Figure A-2). The remainder is discharged to Dredger Cut, a tributary of White Slough (see Figure A-2).

Proposed Expansion

The proposed project involves phased expansion of the domestic effluent treatment capacity to 6.8 MGD by 1989 and 8.5 MGD by 1998. Long-range planning for an ultimate capacity of 10.8 MGD would accompany these expansions, which would generally be achieved by duplicating existing facilities. In addition, a system would be installed to generate electricity from waste digester gas now being flared at the plant site.



Base Map Courtesy of AAA



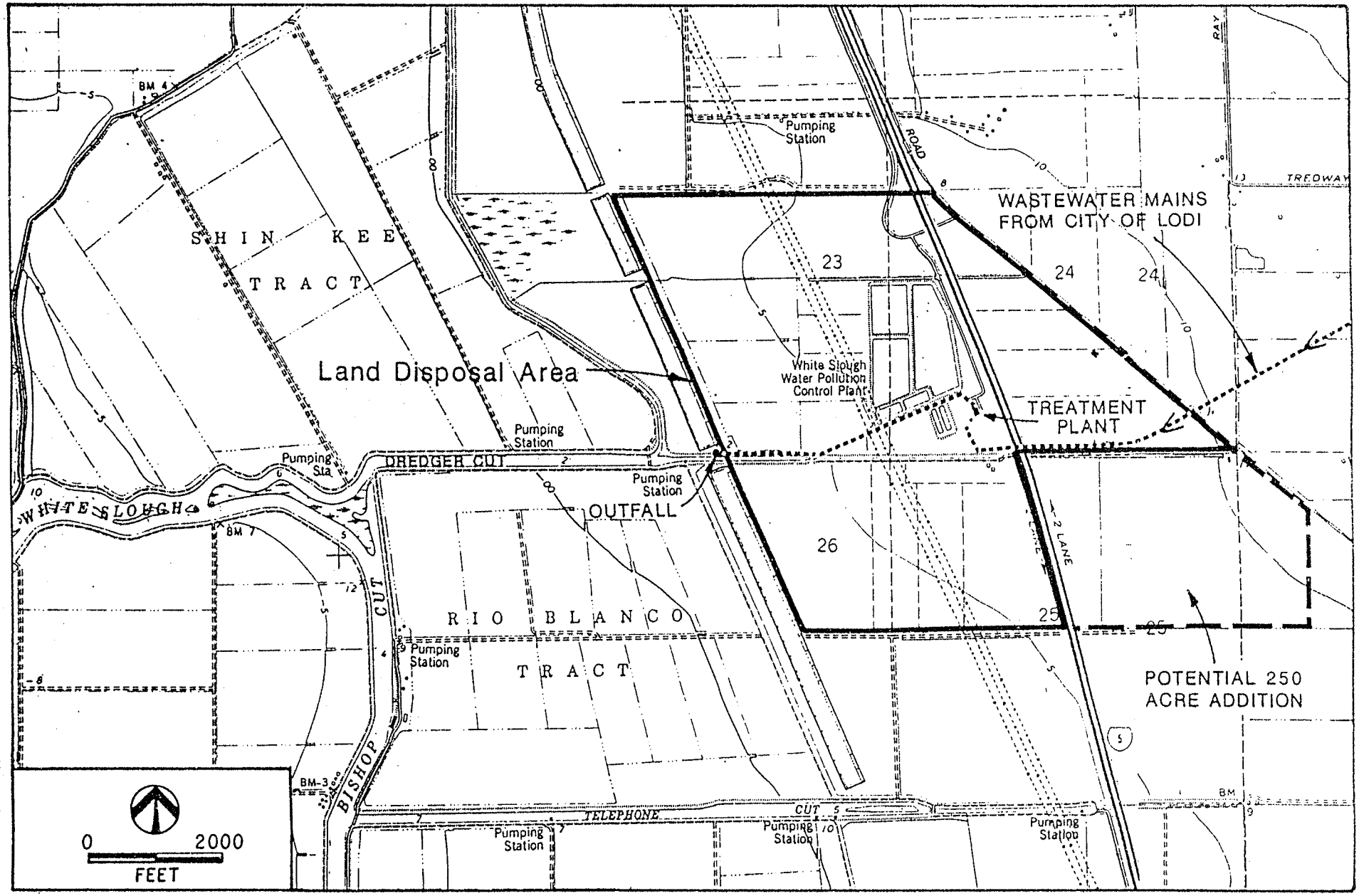


FIGURE A-2. WHITE SLOUGH WATER POLLUTION CONTROL FACILITY - SITE PLAN AND VICINITY

Proposed Effluent Disposal

The proposed effluent disposal approach is to maintain a dual reliance upon agricultural irrigation and disposal to the Delta's waterways. Specifically, approximately 30 percent of the effluent would be disposed of on land when the 6.8 MGD capacity were reached, falling to 24 percent when the 8.5 capacity were reached, through the purchase of a nearby, undetermined 250-acre parcel of agricultural land. In addition, cropping of all effluent disposal lands would be adjusted to maximize irrigation application rates, and additional treated effluent would be made available to adjacent agricultural operations.

Most of the plant's effluent would continue to be disposed of in the Delta waterways at Dredger Cut.

Proposed Sludge Disposal

Sludge would be processed by modifying existing sludge storage lagoons to protect groundwater and by constructing concrete drying beds onsite. The primary disposal option would be landfill at the Harney Lane Landfill or at future county disposal sites. The alternatives of agricultural use on lands east of Interstate Highway 5, or of composting for the benefit of a variety of users, is being investigated further.

Identification of Alternatives

In addition to the proposed project, three effluent disposal alternatives and three sludge disposal alternatives are being evaluated by the project engineers, Black and Veatch, and are proposed for consideration in the EIR. These alternatives are chosen to establish impacts of the entire range of reasonable options, from which any project configuration could ultimately be chosen.

Effluent Disposal Alternatives

1. No Project. The capacity of the pollution control facility would not be expanded, implying imposition of a growth limit for the City of Lodi.

2. Slough Discharge Emphasis. All effluent that could not be readily disposed of on the current city-owned agricultural land would be disposed of in the Delta waterways. The usual 20/20 waste discharge requirement in the receiving waters (20 mg/l biochemical oxygen demand and 20 mg/l suspended solids) would be achieved through a conservative, activated sludge design.

3. Land Disposal Emphasis. This would conform to the Central Valley Regional Water Quality Control Board's objective of land disposal of all effluent from May through October. The existing 665-acre land disposal site would be increased to 2,465 acres (270 percent increase), and storage pond capacity would be increased 150 percent.

Sludge Disposal Alternatives

1. No Project. See discussion above.

2. Land Application. Anaerobically digested sludge would be applied at agronomic rates to feed and fodder croplands, orchards, vineyards, and turf farms east of I-5. The mode of application could be injection or surface spreading of liquid sludge, or surface spreading of dewatered or dried sludge.

3. Composting. Anaerobically digested and dewatered sludge would be cornposted onsite to further reduce pathogens and to improve its acceptability in the general soil amendment marketplace. Methods could include aerated windrow or static pile processes, with the addition of woodwastes or rice hulls as bulking agents.

Approvals Required

Expansion of the White Slough Water Pollution Control Facility would require the following approvals:

Central Valley Regional Water Quality Control Board. A permit to discharge waste under the National Pollutant Discharge Elimination System (NPDES).

City of Lodi. Finding that capital expenditure is consistent with the City of Lodi General Plan.

Attachment B

Environmental Assessment

INITIAL STUDY

See attachment for explanation of checklist responses below

1. PROJECT TITLE City of Lodi White Slough Water Pollution Control Facility Expansion

2. LOCATION see Attachment A

3. PROJECT DESCRIPTION See Attachment A

4. General Plan Designation (A) Existing (city), (B) Proposed Public

5. Site description and surrounding land use Existing treatment facility in agricultural area; I-5 borders property on the east.

6. Zoning (A) Existing, (B) Proposed Public

Will the Project Have a Significant Effect Through Any of the Following Impacts?	Yes	No	Maybe
7. a. Substantial alteration of natural topography, soil or subsoil features			X
b. Substantially degrade surface or groundwater quality			X
c. Substantially deplete surface or groundwater resources		X	
d. Substantially interfere with groundwater flow or recharge		X	
e. Cause a significant affect related to flood, erosion or siltation			X
f. Substantial interference with the habitat of any species of fish, wildlife or plant			X
g. Violate ambient air quality standards or create substantial air emissions or objectionable odors			X
h. Substantially increase ambient noise or glare level for adjoining areas		X	
i. Substantial reduction of existing cropland		X	
j. Expose individuals or property to geologic, public health, traffic, flood, seismic or other hazards			X

		Yes	No	Maybe
k.	Have a substantial, demonstrable, negative aesthetic effect			X
l.	Result in the disruption or alteration of an archeological, historical or paleontological site			X
m.	Cause or allow substantial increase in consumption in any natural resources		X	
n.	Results in the use or waste of substantial amounts of fuel or energy			X
o.	Necessitate major extensions of water, sewer, storm drain, electrical lines or public roads		X	
p.	Substantially increase demand for or utilization of public services such as schools or fire or police protection		X	
q.	Substantially change transportation patterns related to existing traffic load, street capacity, parking availability or traffic safety		X	
r.	Induce substantial growth, concentration or displacement of population			X
s.	Result in an alteration or conflict with existing or planned land uses			X
t.	Conflict with adopted plans, goals or policies of the City of Lodi			X

Adverse impacts of project and their magnitude: Effects of the disposal of treated effluent on beneficial uses of a Delta Slough could be significant. The relationship of treatment plant capacity expansion to city growth could be significant. Several other impacts may also be significant.

Mitigation Measures to Reduce Adverse Impacts Identified by Initial Study: Mitigation measures will be developed in the EIR required for this project, once all impacts are more precisely defined.

RECOMMENDATION

____ Negative Oeclaration X EIR ____ Conditional Negative Declaration

The potential occurrence of significant effects is readily foreseeable, requiring preparation of an EIR.

JAMES B. SCHROEDER
Environmental Review Officer

By_____ Date_____

EIR/1-81

Discussion of Issues Identified on Initial Study

7a. Soil and subsoil may be altered in chemistry and productivity by application of effluent or sludge.

7b. Delta slough water quality could potentially be diminished.

7c. The facility is intended to restore the usability of groundwater resources that have been contaminated by human waste, thus increasing the viable supply.

7d. The choices of land disposal by agricultural irrigation or slough disposal should have no substantial effect on groundwater movement or recharge.

7e. Land treatment properties could be in flood-prone zones, potentially affecting quality of floodwaters.

7f. Land treatment, as well as some of the facilities construction, could affect vegetation resources and terrestrial wildlife. Surface water disposal could interfere with fishery resources.

7g. Objectionable odors from sludge drying beds and the compost area could be created.

7h. Noise and glare increases would be less than significant.

7i. The project would probably have no effect on the acreage of existing cropland; it would contribute to increased cropland productivity.

7j. The treatment plant property improvements may be subject to flood and seismic hazards.

7k. The expansion of facilities within the existing plant would probably not cause a substantial visual change. Substitution of wastewater for present irrigation waters on land disposal areas would not cause a visual change.

7l. Undiscovered cultural sites could be disturbed during facility construction and any land-leveling involved with land disposal irrigation improvement, if any.

7m. The plant is a natural resource rehabilitation project.

7n. Energy is consumed to drive the treatment process; its use would increase with plant expansion.

7o. No infrastructure increases are required.

7p. No demands on other public services except solid waste disposal would be induced.

7q. No potentially significant traffic effects are expected, although some sludge or soil amendment hauling nay be generated.

7r. The project would allow substantial growth of the City of Lodi, if treatment plant capacity has been limiting to growth.

7s. To the degree that facility expansion would accommodate growth beyond that presently allowable under the City General Plan, facility construction could conflict with planned land use.

7t. In the sense just described, the project could conflict with landuse designations and growth policies of the City of Lodi.

Attachment C

SCOPE OF EIR

The White Slough Water Pollution Control Facility Expansion EIR will focus on the following environmental impacts, which have been determined to be potentially significant based on the attached Initial Study (Attachment E!. For each impact area, the report will. include the environmental setting, analysis of potential impacts, ind recommended mitigation measures. Issues to,be included are:

- o Geology and soils
  - Seismic hazard
  - loss of soil resource
  - enhancement of soil productivity through effluent and sludge disposal
- o Hydrology
  - flood hazards
  - changes in groundwater and surface water conditions
- o Water Quality
  - effect of effluent disposal on Delta waters
  - effect of sludge disposal on surface and groundwater
- o Wildlife
  - changes in habitat values in plant expansion areas
  - potential for affecting protected species in plant expansion areas
  - effect on aquatic wildlife in receiving waters
- c Vegetation
  - loss or alteration of plant communities from facilities' construction and land disposal of effluent and sludge
- o Air Quality
  - changes in offsite odor impacts from both process modifications and changes in disposal modes
  - changes in our emissions from replacement of gas flaring with electrical generation
- o Land Use
  - consistency with county general plan and zoning
  - compatibility with adjacent land use
  - effects of land use conversions
- o Public Services
  - direct effects on water supply, wastewater treatment, and solid waste disposal

- Public Health and Safety
  - contamination of surface waters used for recreation
  - effects on other beneficial uses of ground and surface waters
  - aerosol drift to adjacent lands
  - vector proliferation and effects
  - contamination of food products from surface disposal of effluent and sludge

- Cultural resources
  - determination of resources potentially affected, based on record search and field survey of previously unsurveyed facilities sites, if any

- Energy
  - energy consumption increase for additional treatment

- Aesthetics
  - changes in views from public vantage points

- Growth - assessment of city growth increment that expanded treatment would allow, on a non-site-specific basis:
  - estimated population and residential, commercial, and industrial unit increases
  - estimated acreages of such development and pressures for land use change
  - loss of vegetation and wildlife resources
  - employment and traffic changes
  - noise and air quality changes
  - changes in demands for public services
  - fiscal impact on the City of Lodi

Appendix B

GROWTH INDUCEMENT FOR UNINCORPORATED AREAS

In the past few years, the city has received several requests for wastewater service outside the city limits, which city ordinance now prohibits. These requests have always been denied.

In 1987, County Service Area No. 31 (CSA No. 31) requested tie-in service to White Slough WPCF to allow expansion of present highway commercial uses at the junction of Highway 12 and Interstate 5. These uses include a truck stop, gas stations, and restaurants. The developer of the truck stop (Saddle City) wishes to develop a motei, restaurant, and recreation vehicfe (RV) park. Another 26-acre parcel also is proposed for development. San Joaquin County has required the developer to either construct a package treatment plant or utilize the WPCF.

The Lodi Public Works Director, after preparing a review of potential impacts on the WPCF, recommended several conditions of approval for connection of the CSA (Ronsko pers. comm.). The county was urged to petition the Lodi City Council for approval if the conditions were found acceptable. The city is currently awaiting a decision by the county.

Serving CSA No. 31 would reduce the city's potential growth made possible by WPCF expansion. The CSA No. 31 wastewater flow would consume about 4.25 percent of the additional WPCF capacity (or 5.5 percent, if the 26-acre parcel also were developed). This use would deny capacity for about 320-430 residential units within the city (Ronsko pers. comm.).

Appendix C

COMMON AND SCIENTIFIC NAMES OF WILDLIFE SPECIES MENTIONED IN THE TEXT

Common Name	Scientific Name
Pacific treefrog	Hyla regilla
Bullfrog	Rana catesbeiana
Giant garter snake	Thamnophis couchi gigas
Pied-billed grebe	Podilymbus podiceps
Western grebe	Aechmophorus occidentalis
Couble-crested cormorant	Phaiacrocorax auritus
American bittern	Botaurus lentiginosus
Great blue heron	Ardea herodias
Great egret	Casmerodius albus
Creen-backed heron	Butorides striatus
Black-crowned night heron	Nycticorax nycticorax
Green-winged teal	Anas crecca
Mallard	Anas platyrhynchos
Northern pintail	Anas acuta
Cinnamon teat	Anas cyanoptera
Northern shoveler	Anas clypeata
Gadwall	Anas strepera
Canvasback	Aythya valisineria
Lesser scaup	Aythya affinis
Ruddy duck	Oxyura jamaicensis
Black-shouldered kite	Elanus caeruleus
Northern harrier	Circus cyaneus
Cooper's hawk	Accipiter cooperii
Red-shouldered hawk	Buteo lineatus
Red-tailed hawk	Buteo jamaicensis
American kestrel	Falco sparverius
Ring-necked pheasant	Phasianus colchicus
California black rail	Laterallus jamaicensis coturniculus
American coot	Fulica americana
Greater sandhill crane	Crus canadensis tabida
Black-bellied plover	Pluvialis squatarola
Killdeer	Charadrius vociferus
Black-necked stilt	Himantopus mexicanus
American avocet	Recurvirostra americana
Long-billed curlew	Numenius americanus
Forster's tern	Sterna forsteri
Rock dove	Columba livia
Common barn-owl	Tyto alba
Great horned owl	Bubo virginianus

Belted kingfisher	Ceryle alcyon
Horned lark	Eremophila alpestris
Marsh wren	Cistothorus palustris
American robin	Turdus migratorius
Water pipit	Anthus spinoletta
European starling	Sturnus vulgaris
Song sparrow	Melospiza melodia
Red-winged blackbird	Agelaius phoeniceus
Western meadowlark	Sturnella neglecta
Brewer's blackbird	Euphagus cyanocephalus
House sparrow	Passer domesticus
California ground squirrel	Spermophilus beecheyi
Botta's pocket gopher	Thomomys bottae
Beaver	Castor canadensis
Deer mouse	Peromyscus maniculatus
California vole	Microtus californicus
Muskrat	Ondatra zibethicus
House mouse	Mus musculus
Gray fox	Urocyon cinereoargenteus
Ringtail	Bassariscus astutus
Raccoon	Procyon lotor
Striped skunk	Mephitis mephitis

Appendix D

WASTE DISCHARGE REQUIREMENTS FOR THE LODI WHITE SLOUGH WATER POLLUTION CONTROL PLANT

Source: California Regional Water Quality Control Board, Central Valley Region 1986.

STATE OF CALIFORNIA
GEORGE DEUKMEJIAN, Governc
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
CENTRAL VALLEY REGION
3201 S STREET
SACRAMENTO, CALIFORNIA 95816-7090
PHONE: (916) 445-0270

CERTIFIED MAIL
NO. P 222 392 545

5 Match 1386

Mr. Fran E. Forkas
Water/Wastewater Superintendent
City of Lodi
White Slough Water Pollution Control Plant
12751 N. Thornton Road
Lodi, CA 95240

TRANSMITTAL OF ADOPTED WASTE DISCHARGE REQUIREMENTS

Enclosed is an official copy of Order No. 86-041 as adopted by the California Regional Water Quality Control Board, Central Valley Region, at its last regular meeting.

ANTONIA K. J. VORSTER
Senior Engineer

PSI:jec

Enclosures - Adopted Order
Standard Provisions (discharger only)

cc+encl: Environmental Protection Agency, Region 9, San Francisco
U.S. Army Corps of Engineers, Sacramento
U.S. Fish and Wildlife Service, Sacramento
National Marine Fisheries Service, Tiburon
Dept. of Health Services, Sanitary Engineering Branch, Sacramento
Department of Fish and Game, Region 11, Rancho Cordova
Department of Water Resources, Central District, Sacramento
State Water Resources Control Board, Office of Chief Counsel, Sacramento
Office of Historic Preservation, Sacramento
San Joaquin Local Health District, Stockton
San Joaquin County Planning Department, Stockton

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 86-041

NPDES NO. CA0079243

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF LODI
WHITE SLOUGH WATER POLLUTION CONTROL PLANT
SAN JOAQUIN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The City of Lodi, White Slough Water Pollution Control Plant, (hereafter Discharger) submitted a Report of Waste Discharge, dated 5 November 1984, and applied for a permit to discharge waste under the National Pollutant Discharge Elimination System (NPDES).

2. The City of Lodi, White Slough Water Pollution Control Plant, discharges an average of 4.7 million gallons per day (mgd) and proposes to discharge a maximum of 5.8 mgd of treated domestic wastewater from secondary treatment facilities into Dredger Cut, White Slough, Bishop Cut, and the San Joaquin Delta, waters of the United States, at a point five miles southwest of Lodi, in the southeast 1/4 of Section 23, T3N, R5E, MDB&M.

3. The Report of Waste Discharge describes the existing discharge as follows:

Average Flow: 4.7 mgd

Design Flow: 5.8 mgd

Average Temperature: 80°F (27°C) Summer; 66°F (19°C) Winter

~~Constituent~~	mg/l	~~lbs/day~~
BOD	26	1019
Suspended Matter	24	941
pH	6.4 - 7.0	--

4. An average of 0.86 mgd of industrial wastewater from a cannery, a commercial laundry, a metal finisher, a cherry briner, and some storm water is discharged to holding ponds and irrigation areas of approximately 650 acres, as shown on Attachments A and B which are hereby part of this Order. Treated domestic wastewater is also discharged to fields from July to October and when the dissolved oxygen concentration in White Slough falls below 5.0 mg/l. Only fodder, fiber, and seed crops are irrigated by the aforementioned wastewaters.

5. The Discharger has an EPA approved pretreatment program which, in conjunction with City Ordinance No. 1307, regulates the industrial wastes that can be discharged into the City's industrial wastewater treatment plant.

6. EPA and the Regional Board have classified this discharge as a major discharge.

7. The State of California Department of Health Services (DHS) has expressed concern regarding the discharge of tailwater and wastewater into the Delta. DHS is conducting a study to determine disinfection requirements necessary to protect public health considering the dilution capacity of the receiving waters. The Board may modify or revise this Order based on the results of the study.

8. The Board, on 25 July 1975, adopted a Water Quality Control Plan for the Sacramento-San Joaquin Delta Basin (58) which contains wtter quality objectives. These requirements are consistent with that Plan.

9. The beneficial uses of Dredger Cut, White Slough, Bishop Cut, and Delta waters are municipal, industrial, and agricultural Supply; recreation; esthetic enjoyment; navigation; ground water recharge, fresh water replenishment; and preservation and enhancement of fish, wildlife, and other aquatic resources.

10. The beneficial uses of the ground water are municipal, domestic, industrial, and agricultural supply.

11. Effluent limitations, and toxic and pretreatment effluent standards, established pursuant to Sections 208(b), 301, 302, 304, and 307 of the Clean Water Act and amendments thereto, are applicable to the discharge.

12. The discharge is presently governed by Waste Discharge Requirements Order No. 80-115, adopted by the Board on 12 September 1980.

13. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Kater Code.

14. The Board has notified the Discharger and interested persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

15. The Board, in a public meeting, heard and considered all conents pertaining to this discharge.

16. Thfs order shall serve as an NPDES permit pursuant to Section 402 of the Clean Water Act, or amendments thereto, and shall take effect ten days from the date of hearing, provided EPA has no objections.

IT IS HEREBY ORDERED that the City of Lodi, White Slough Water Pollution Control Plant, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Effluent Limitations:

1. The discharge of effluent in excess of the following limits is prohibited from 1 July through 31 October:

Constituents	Units	Monthly Average	Weekly Average	Monthly Median	Daily Maximum
BOD(1)	mg/l	30	40	--	50
	lbs/day	967(2)	1,935(2)	--	2,419(2)
Total Suspended Matter	mg/l	20	40	--	50
	lbs/day	967(2)	1,935(2)	--	2,419(2)
Settleable Matter	ml/l	--	--	--	0.1
Chlorine Residual	mg/l	--	--	--	0.1
Total Coliform Organisms	MPN/100 ml	--	--	23	500
Oil and Grease	mg/l	10	--	--	15
	lbs/day	484(2)	--	--	726(2)

(1) 5-day, 20°C biochemical oxygen demand (BOD)
(2) Based upon a design treatment capacity of 5.8 mgd

2. The discharge of an effluent in excess of the following limits is prohibited from 1 November through 30 June:

Constituents	Units	Monthly Average	Weekly Average	Monthly Median	Daily Maximum
BOD(1)	mg/l	30	45	--	50
	lbs/day	1,451(2)	2,177(2)	--	2,419(2)
Total Suspended Matter	mg/l	30	45	--	50
	lbs/day	1,451(2)	2,177(2)	--	2,419(2)

Constituents	Units	Monthly Average	Weekly Averaae	Monthly Median	Daily Maximum
Settleable Matter	ml/l	--	--	--	0.1
Chlorine Residual	mg/l	--	--	--	0.1
Total Coliform Organisms	MPN/100 ml	--	--	23	500
Oil and Grease	mg/l	10	--	--	15
	lbs/day	484(2)	--	--	726(2)

(1) 5-day, 20°C biochemical oxygen demand.(800)
(2) Based upon a design treatment capacity of 5.8 mgd

3. The arithmetic mean biochemical oxygen demand (5-day) and suspended solids in effluent samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

4. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

5. The maximum daily dry weather flow shall not exceed 5.8 million gallons.

6. The Discharger shall use the best practicable cost-effective control technique currently available to limit mineralization to no more than a reasonable increment.

7. Survival of test fishes in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay ---------- 70%
Median for any three or more bioassays ------- 90%

8. By-pass or overflow of untreated or partially treated waste to surface waters or surface water drainage courses is prohibited.

B. Discharge of treated domestic and industrial wastewater to land:

1. The discharge shall not cause degradation of any water supply.

2. Discharge of reclaimed wastewater (domestic and industrial) to surface waters or surface water drainage courses is prohibited.

3. The discharge shall remain in the designated disposal area at all times.

4. Areas irrigated with domestic wastewater shall have a testing period of at least 30 days before storm runoff from these areas can be discharged to surface waters or surface water drainage courses. Storm runoff within the 30-day resting period shall be contained in collection systems and/or storage ponds.

5. The discharge to irrigation areas of domestic wastewater in excess of the following limits is prohibited:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5*	mg/l	40.0	80.0
Settleable Matter	ml/l	0.2	0.5

*5-Day, 20°C Biochemical Oxygen Demand

6. The dissolved oxygen concentration in the industrial aeration ponds and domestic and industrial holding ponds shall not be less than 1.0 mg/l for 16 hours in any 24 hour period.

C. Sludge Disposal:

1. Collected screening, sludges, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer.

D. Receiving Water Limitations:

1. The Discharger shall not cause the dissolved oxygen concentration in either White Slough or Bishop Cut to fall below 5.0 mg/l. When dissolved oxygen concentrations fall below these limits, the discharge of wastes to surface waters is prohibited.

2. The discharge shall not cause visible oil, grease, scum, foam, floating or suspended material in the receiving waters or watercourses.

3. The discharge shall not cause concentrations of any materials in the receiving waters which are deleterious to human, animal, aquatic, or plant life.

4. The discharge shall not cause esthetically undesirable discoloration of the receiving waters.

5. The discharge shall not cause fungus, slimes or other objectionable growths in the receiving waters.

6. The discharge shall not cause bottom deposits in the receiving waters.

7. The discharge shall not increase the turbidity of the receiving waters more than 10% above background.

8. The discharge shall not alter the ambient pH of White Slough more than 0.5 units.

9. The discharge shall not increase the ambient temperature of White Slough more than 5°F (3°C).

10. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Clean Water Act and regulations; adopted thereunder. If more stringent applicable water quality standards are approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this order in accordance with such more stringent standards.

E. Provisions:

1. The Discharger shall submit an operational plan showing how requirements will be met when treated domestic and industrial wastewater is being applied to land. This plan shall include applications methods; loading rates, flows and quality of reclaimed wastewater (domestic and industrial) and containment measures for land disposal.

2. Neither the discharge nor its treatment shall create a nuisance or pollution as defined in Section 13050 of the California Water Code.

3. Reclaimed wastewater shall meet the criteria contained in Title 22, Division 4, California Administrative Code (Section 60301, *et* seq.).

4. The requirements prescribed by this Order rescind Order No. 80-115, adopted by the Board on 12 September 1980.

5. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements (NPDES)", dated 1 August 1984, which are part of this Order.

6. The terms and conditions of the pretreatment program shall be enforceable through these waste discharge requirements.

7. If the study by DHS finds that the effluent limitations are not adequate to protect public health, the Board may modify or revise this Order including but not limited to disinfection requirements in order to protect public health.

8. The Discharger shall comply with the attached Monitoring and Reporting Program No. 86-041.

9. This Order expires on 1 February 1991 and the Discharger must *file* a Report of Waste Discharge in accordance with Title 23, California Administrative Code, not later than 180 days in advance *of* such date as application for issuance *of new* waste discharge requirements.

10. The Discharger shall provide certified wastewater treatment plant operators in accordance with regulations adopted by the State Water Resources Control Board.

11. In the event of any change in control or ownership *of* land or *waste* discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

12. The Discharger must notify the Regional Board as soon as it knows or has reason to believe:

    a. That any activity has occurred or will occur that would result in the discharge of any toxic pollutant that is not limited in this permit, if that discharge will exceed the highest *of* the following "notification levels":

        (1) One hundred micrograms per liter (100 ug/l);

        (2) Two hundred micrograms per liter (200 ug/l for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and 2-methyl-4-6-dinitrophenol; and one milligram per liter (1 mg/l for antimony;

(3) Five (5) times the maximum concentration **value** reported for that pollutant in the permit application; or

(4) The level established *by* the Regional Board in accordance with **40** CFR 122.44(f).

b. That it has begun or expects to begin to use or manufacture **as** an intermediate or final product or by-product any toxic pollutant that *was* not reported in the permit application.

I, **WILLIAM** H. CROOKS, Executive Officer, **do** hereby certify **the** foregoing is a full, true, and correct COPY of an Order adopted by the California Regional. Water Quality Control Board, Central Valley Region, on 28 February 1986.

WILLIAM H. CROOKS, Executive Officer

2/11/86:PSI:jec

Attachments

Appendix E

WATER QUALITY OBJECTIVES FOR THE DELTA

Source: California Regional Water Quality Control Board, Central Valley Region 1975.

DELTA WATER QUALITY OBJECTIVES
TABLE 4-2

This table presents specific numeric objectives which apply to the waters of the Sacramento-San Joaquin Delta. All waters lying within the legal boundaries of the Delta are covered by these objectives unless otherwise specified.

The legal boundaries of the Delta, together with definitions and locations of water quality objective stations and water bodies pertinent to the interpretation of these objectives, are shown in Figure 4-1.

Bacteria

The general objective for bacteria, as stated in Table 4-1. Objectives for tnland Surface Waters. applies to all Delta waters.

Biostimulants

The general objective for biostimulants, as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Chemical Constituents Excluding Salinity

The objectives for chemical constituents for waters designated as domestic or municipal supply (MUN), as stated in Table 4-1, Objectives for Inland Surface Waters, apply to all Delta waters.

The limits for inorganic chemicals listed in Table 4-1.1 shall apply to all Delta waters. These limits are in addition to those specified in the California Administrative Code. Title 17, Chapter 5, Subchapter 1, Group 1, Article 4. Section 7019, Table 2. To the extent of any conflicts, the more stringent objective applies.

The general objective for waters designated as agricultural supply (AGR) in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Color

The general objective for color as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Dissolved Oxygen

.The general objective for dissolved oxygen as stated in Table 4-1, Objectives for tnland Surface Waters, applies to all Delta waters.

The following objectives apply to indicated Delta waters:

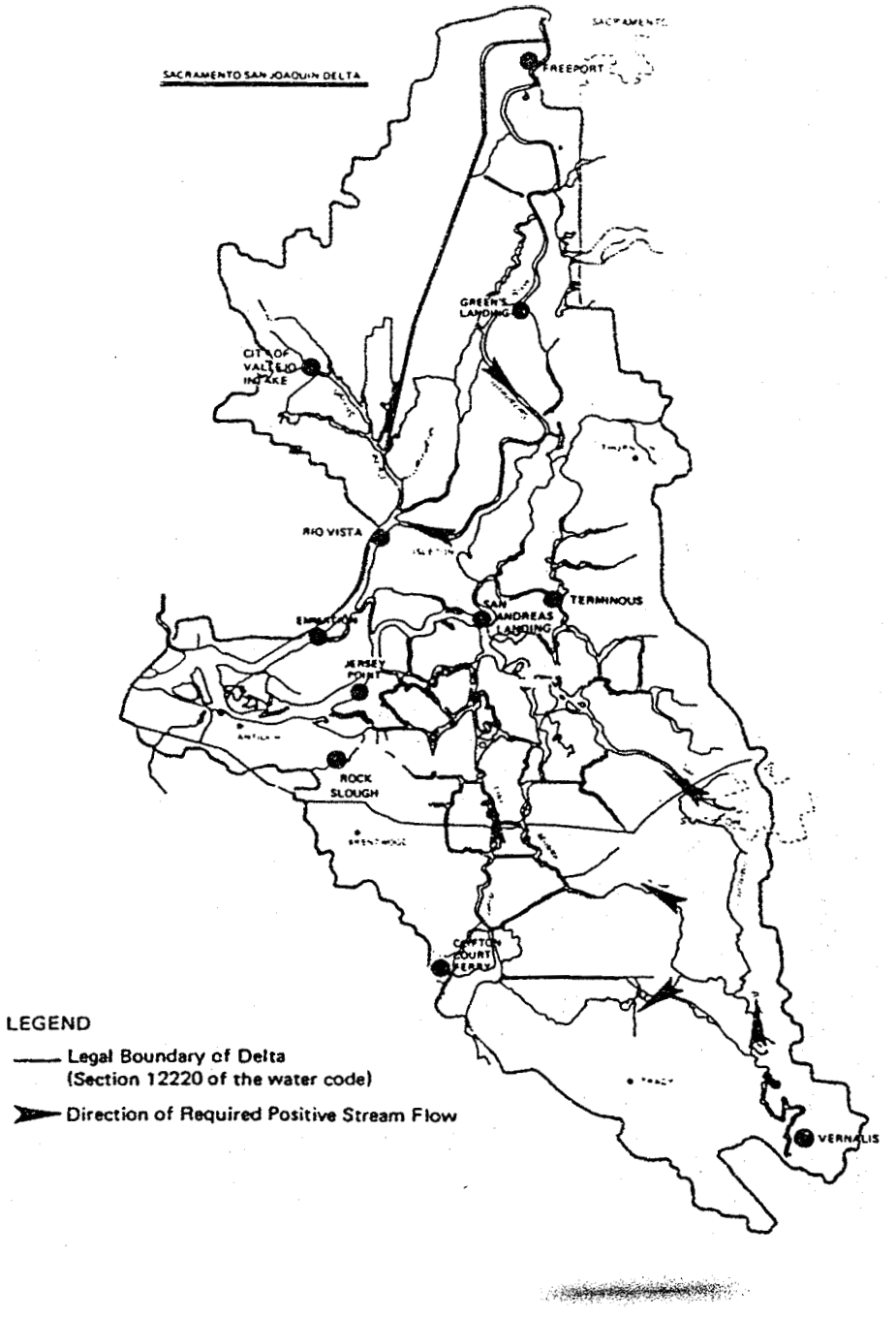
The dissolved oxygen concentration shall not be reduced below the following levels:

- 7.0 mg/l in the Sacramento River and in all Delta waters west of the Antioch Bridge.
- 5.0 mg/l in all other Delta waters with the following exception:
  - In certain bodies of water which are constructed for special purposes and from which fish have been excluded or the fishery is not important as a beneficial use.

Floating Materials

The general objective for fioating materials as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

BOUNDARIES AND WATER QUALITY STATIONS



DELTA WATER QUALITY OBJECTIVES
BOUNDARIES AND DEFINITIONS
FIGURE 4-1

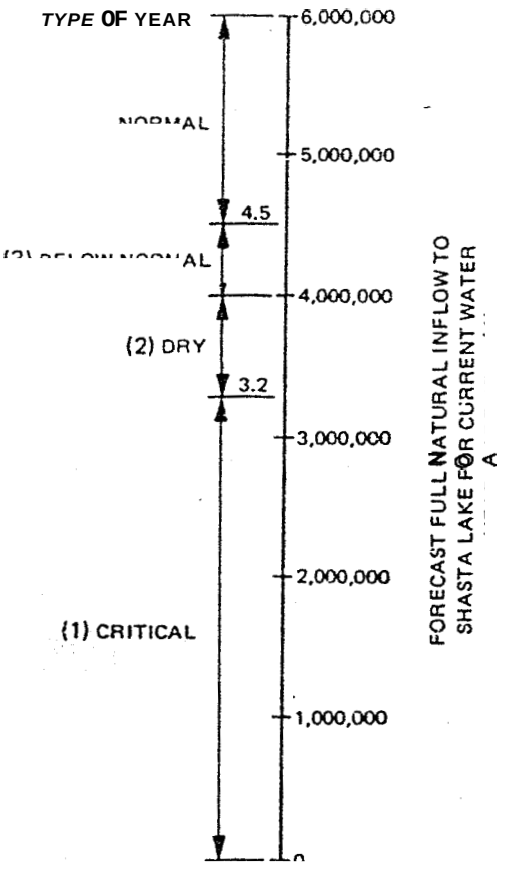
DEFINITIONS OF TYPES OF WATER YEARS

1. "Critical year" shall mean any year in which either of the foilowing eventualities exists:
   a. The forecasted full natural inflow to Shasta Lake for the current Water Year (1 October of the preceding calendar year through 30 September of the current calendar year) is equal to or less than 3,200,000 acre-feet; or
   b. The total accumulated actual deficiencies below 4,000,000 acre-feet in the immediately prior water year or series of successive prior water years each of which had inflows of less than 4,000,000 acre-feet together with the forecasted deficiency for the current water year, exceed 800,000 acre-feet.

2. "Dry year" shall mean any year other than a critical year in which the forecasted full natural inflow to Shasta Lake for the current water year is equal to or less than 4,000,000 acre-feet.

3. "Below normal year" shall mean any year in which the forecasted full natural inflow to Shasta Lake for the current water Year is equal to or less than 4,500,000 acre-feet but more than 4,000,000 acre-feet.

4. "Fuii natural inflow to Shwta Lake" shall mean the computed inflow to Shasta Lake under present water development above Shasta Lake. In the event that a major water project is completed above Shasta Lake after 1 September 1963 which materially alters the present regimen of the stream systems contributing to Shasta Lake, the computed inflow to Shasta Lake will be adjusted to eliminate the effect of such water project After consultation with the State, the Weather Bureau, and other recognized forecasting agencies, the United States Bureau of Reclamation will select the forecast to be used and will make the details of it available to the Delta water users. The same forecasts used by the United States for the operation of the Central Valley Project shall be used to make the forecasts under this agreement. Such forecasts shall be made by February 15 of each year and may be revised as frequently thereafter as conditions and information warrant.



Oil and Grease

The general objective for oil and grease as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

pH

The general objective for pH as stated in Table 4-1, Objectives for inland Surface Waters, applies to all Delta waters.

Pesticides

The general objective for pesticides as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

In addition, the following objective applies to all Delta waters:

The total concentration of ail pesticides shall not exceed 0.6 µg/l as determined by the summation of individual pesticide Concentrations.

Radioactivity

The general objective for radioactivity as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Salinity

The following objectives apply *to* indicated Delta waters.

- Total Dissolved Solids – The total dissolved solids (TDS) concentration of Delta waters shall be maintained below the indicated limits for the waters specified. If a reliable correlation can be demonstrated between TDS and EC, such correlation can be used to aid in monitoring for compliance with these objectives.

  (1) At Cache Slough at the City of Vallejo Intake, the TDS shall not exceed *250* mg/l.

  (2) At Rock Slough at Contra Costa Canal Intake, the mean tidal cycle value TDS shall not exceed *750* mg/l and in addition shall not exceed **380** mg/l for at least *65* percent of any year.

  (3) In the San Joaquin River near Vemalis, the mean average TDS concentration shall not exceed 500 mg/l over any consecutive 30-day period.

  (4) In eastern Delta channels, the mean monthly TDS concentration shall not exceed 700 mg/l.

  (5) At Terminous in Little Potato Slough, at Rio Vista in the Sacramento River at San Andreas Landing in the San Joaquin River, at Clifton Court Ferry in Old River, and after the initial operation of the Peripheral Canal, at the bifurcation of Middle River and Old River,

  a. a mean daily TDS concentration of 700 mg/l or less when measured on the basis of the average mean daily value for any 14 consecutive days,

  b. a mean monthly TDS concentration of 500 mg/l or less when measured on the basis of the average mean daily value for any calendar month,

  c. a mean annual TDS concentration of 450 mg/l or less when measured on the basis of the average mean daily value for any calendar year.

TABLE 4-2 (Continued)

(6) After 1 April in a dry or critical year and after 1 August in a below normal year and until 31 December of the same calendar year, the TDS criteria specified in (5) above may reach, but not exceed, 800 mg/l for item a, 600 mg/l for item b, and 500 mg/l for item c; provided, however, the average of the values of the total dissolved solids concentration at all of the named locations shall not exceed. for the balance of the calendar year, the mean values specified in (5) above.

(7) Whenever the recorded TDS Concentration in the Sacramento River at Green's Landing exceeds a mean 14-day or mean monthly value of 150 mg/l, the quality criteria in (5) and (6) above may be changed by adding to those values the product of 1% times the amount by which the recorded TDS concentration at Green's Landing exceeds 150 mg/l.

(8) At Antioch. in the San Joaquin River, the average of mean daily TDS for any 14 consecutive days shall not exceed 450 mg/l throughout a period of at least 150 days in each normal or below normal water year: provided. however, that the period is reduced to 120 days during dry water years and 10[illegible] days during critical water years. These objectives shall not apply when the State Board determines thar adequate substitute supplies are available to all existing municipal and industrial water users located in the vicinity of Antioch and Pittsburg.

- Electrical Conductivity – The electrical conductivity of Delta waters shall be maintained below the Indicated limits for the waters specified:

(1) For five weeks, beginning when the water temperature at Antioch has increased to 60°F, the 14-day running average of mean daily salinities in the San Joaquin River at the Antioch Water Works Intake and at Prisoners Point shall not exceed 1,500 micromhos/cm and 550 micromhos/cm (approximately 1,000 and 350 mg/l TDS), respectively. provided that this objective may be modified in any year, when required, for experimentation concerning fishery requirements being carried out in accordance with a plan approved by the State Board and concurred in by the EPA.

(2) At Blind Point on the San Joaquin River, the running average of mean daily values for any 14 consecutive days shall not exceed the following values (millimhos/cm):

Type of *Year*	Months	
	AMJJ	ASONO
Noncritical	2.2	3.1
Critical	3.6	3.6

- Chloride – The chloride concentration of Delta waters shall be maintained below the indicated limits for the waters specified.

(1) At Rock Slough at Contra Costa Canal Intake. the mean tidal cycle value chloride concentration shall not exceed 250 mg/l and shall not exceed 100 mg/l for at least 65 percent of any year.

(2) At Cache Siough at City of Vallejo Intake, the chloride concentration shall not exceed 100 mg/l.

(3) At Jersey Point in the San Joaquin River and at Emmaton (Southwest end of Horseshoe Bend) in the Sacramento River a mean daily chloride concentration of 1,000 mg/l or less when measured on the basis of the average mean daily value for any 14 consecutive days shall not be exceeded, except that after 1 August of a critical year and until 31 December of the same calendar year, the quality criteria set forth above may be increased from 1,000 mg/l to 1,400 mg/l chloride.

(4) At Jersey Point in the San Joaquin River and at Emmaton in the Sacramento River, an average mean daily chloride concentration of 200 mg/l or less for a period of at least 10 consecutive days each year at some time during the period between 1 April and 31 May shall not be exceeded, except in dry or critical years.

The following water quality objective affects water quality in Basin 5B but the point at which it is measured lies outside the basin. This objective is also being adopted as part of the Basin 2 Water Quality Control Plan.

f5) A mean daily chloride concentration less than 4,000 mg/l shall be maintained in waters east of the westerly end of Chipps Island.

Sediment

The general objective for sediment as stated in Table 4-1, Objectives for Iniand Surface Waters, applies to all Defta Waters.

Settleable Material

The general objective for settleable material as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Suspended Material

The general objective for suspended material as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Tastes and Wort

The general objective for tastes and odors as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Temperature

The general objective for temperature as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters.

Toxicity

The general objective for toxicity as stated in Table 4-1, Objectives far Inland Surface Waters, applies to all Delta waters.

Turbidity

The general objective for turbidity as stated in Table 4-1, Objectives for Inland Surface Waters, applies to all Delta waters except as indicated below.

The following objective applies to Delta waters:

(1) Except for periodsof storm runoff, the turbidity of Delta waters shall not exceed the following limits:

50 JTU in the waters of the Central Delta
150 JTU in other Delta waters

Exceptions to the above will be considered when a dredging operation can cause an increase in turbidity. In this case, an allowable zone of dilution within which turbidity in excess of limits can be tolerated will be defined for the operation and prescribed in a discharge permit.

Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California. The provisions of the State Board's "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (Thermal Plan) and any revisions thereto shall apply. Copies of these plans are included verbatim in the "Special Appendix, Plans and Policies."

Bays and Estuaries Policy. The provisions of this plan and any revisions thereto shall apply. Copies of this plan are included verbatim in the "Special Appendix, Plans and Policies." The water quality objectives for inland surface waters, the Delta, and groundwaters are presented in Tables 4-1, 4-2, and 4-3, respectively.

OBJECTIVES FOR INLAND SURFACE WATERS
TABLE 4-1

This table includes water quality Objectives that apply to all inland surface waters (excluding the Delta) of the basins, and objectives that apply only to specific surface water bodies. The identification of water bodies follows the numbering system shown in Figure 2-1. As part of the state's continuous planning process, data will be collected and more specific wafer quality objectives will be developed for those mineral and nutrient constituents where sufficient information is presently not available for the establishment of specific objectives.

Objectives for the waters of the Sacramento-San Joaquin Delta are presented in Table 4-2, Delta Water Quality Objectives

Bacteria

In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.

The following objective applies to the water body specified:

	Applicable Water Body
The fecal coliform concentration based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 100/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 200/300 ml.	Folsom Lake (50)

Biostimulatory Substance,

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

In most water bodies, water quality objectives for nitrogen will not be established until studies to determine the specific effects of nitrogen on algal growth in the Delta, the lower San Joaquin River, and San Francisco Bay are completed.

At the present time, only limited productive areas within the Delta (e.g., Sherman Island and Franks Tract) show any significant levels of sensitivity to nitrogen. Elsewhere in the Delta, indications are that algal levels would not

be influenced by limiting nitrogen because light penetration (a function of turbidity) may be the limiting factor. Until the relationships between nutrients from controllable and uncontrollable sources and algal levels have been established. it is not productive to set specific numerical water quality objectives for nitrogen in the basin waters. Whefever possible, facility Plans should maintain flexibility to allow for future nitrogen removal processes.

Chemical Constituents

Watws shall not contain chemical constituents in concentrations that adversely affect beneficial uses. Water designated for use as domestic or municipal supply (MUNI) shall not contain concentrations of chemical an stituents in excess of the limits specified in California Administrative Code, Title 17, Chaptw 5, Subchapter 1, Group 1, Article 4, Section 7019, Tables *2,* 3, and 4. The limits described therein will be reviewed on a case-by-*case* basis in order to assure Protection of beneficial uses other than MUN, as appropriate. To the extent of any conflict with the above. the more stringent objective applies.

In addition to the limits referred to previously, the limits for inorganic chemicals listed in Table 4-1.1 shall apply to the water bodies indicated.

INORGANIC CHEMICAL LIMITS
TABLE 4-1.1

Constituent	Maximum Concentration mg/l	Applicable Water Body
Arsenic	0.01	
Barium	0.1	
Copper	0.01	
Cyanide	0.01	Sacramento River, Keswick Dam to Eye Street Bridge (13,30)
Iron	0.3	American River, Folsom Dam to Sacramento River (51)
Manganese	0.05	Folsom Lake (50), Sacramento-San Joaquin Delta (A)
Silver	0.01	
Zinc	0.1	

The following objectives for electrical conductivity and total dissolved solids apply to the water bodies specified. To the extent of any conflict with the above, the more stringent shall apply.

(1) The 25°C Electrical Conductivity:	Applicable Water Body
• Shall not exceed *230* micromhos/cm (50 percentile) or 235 micromhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain; or 240 micromhos/cm (50 percentile) or 340 micromhos/cm (90 percentile) at Freeport, based upon previous moving 10 Years or record.	Sacramento River, Shasta Dam to Colusa Basin Drain (13) Sacramento River, Colusa Basin Drain to Eye Street Bridge (30)

OBJECTIVES FOR INLAND SURFACE WATERS
TABLE 4-1 (Continued)

	Applicable Water Body
• Shall nor exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River.	North Fork, Feather River (33) Middle Fork, Feather River, Little Last Chance Creek to Lake Oroville (36) Feather River, Fish Barrier Dam to Sacramento River (40)
• Shall not be greater than 150 micromhos/cm from Friant Dam to Gravelly Ford (90 percentile).	San Joaquin River, Friant Dam to Mendota Pool (69)
(2) Total Dissolved Solids:	
• Shall not exceed 1,300,000 tons	Goose Lake (2)
• Shall not exceed 125 mg/l (90 percentile)	North Fork, American River, Source to Folsom Lake (44) Middle Fork, American River, Source to Folsom Lake (45) South Fork, American River, Source to Folsom Lake (48,49) American River. Folsom Darn to Sacramento River (51)
• Shall not exceed 100 mg/l (90 percentile)	Folsom Lake (50)

Color

Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses.

Dissolved Oxygen

The monthly median of the mean daily dissolved oxygen concentration shall not fall below 85 percent of saturation in the main water mass and the 95 percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time:

• Waters designated WARM	5.0 mg/l
• Waters designated COLD	7.0 mg/l
• Waters designated SPWN	7.0 mg/l

The following objectives apply to the water bodies specified. To the extent of any conflict with the above, the more stringent objective applies. The dissolved oxygen concentrations:

	Applicable Water Body
(1) Shall be maintained at or near established seasonal levels from Keswick Dam to Eye Street Bridge	Sacramento River, Shasta Dam to Eye Street Bridge (13,30)

TABLE 4-1 (Continued)

		Applicable Water Body
(2)	Shall be greater than or equal to 9.0 mg/l from Keswick Dam to Hamilton City from 1 June to 31 August. When natural conditions lower the dissolved oxygen below this level. the concentration shall be maintained at or above 95 percent of saturation.	Sacramento River, Shasta Dam to Colusa Basin Drain (13)
(3)	Shall be greater than or equal to 7.0 mg/l from Hamilton City to Eye Street Bridge from 1 June to 31 August.	Sacramento River, Shasta Dam to Eye Street Bridge (13, 40)
(4)	Shall be greater than or equal to 7.0 mg/l all year.	Lake Natoma
(5)	Shall be greater than or equal to 8.0 mg/l from Oroville Fish Barrier Dam to Honcut Creek from 1 September to 31 May.	Feather River, Fish Barrier Dam to Sacramento River (40)
(6)	Shall be greater than or equal to 8.0 mg/l from Cressey to New Exchequer Dam at all times.	Merced River, Source to McClure Lake (78)
(7)	Shall be greater than or equal to 8.0 mg/l from Waterford to La Grange from 15 October to 15 June.	Tuolumne River, Don Pedro Dam to San Joaquin River (86)

Floating Material

Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.

Oil and Grease

Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

pH

The pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.

The following objective applies to the water body specified:	Applicable Water Body
pH shall be less than 9.5 and greater than 7.5 at all times.	Goose Lake (2)

Pesticides

No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life that adversely affects beneficial uses. Pesticides are defined as any substance or mixture of substance used to control objectionable insects, weeds, rodents, fungi, or other forms of plant or animal life.

Total identifiable chlorinated hydrocarbon pesticides shall not be present at concentrations detectable within the accuracy of analytical methods prescribed in Standard Methods for the Examination of Water and Wastewater, latest edition, or other equivalent methods approved by the Executive Officer.

OBJECTIVES FOR INLAND SURFACE WATERS
TABLE 4-1 (Continued)

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the limiting concentrations set forth in California Administrative Code, Title 17, Chapter 5, Subchapter 1, Group 1, Article 4, Section 7019, Table 4.

The following objectives apply to the water bodies specified. To the extent of any conflict with the above, the mare stringent objective applies.

	Applicable Wader Body
The sum of the individual concentrations of pesticides shall not exceed 0.1 µg/1.	Folsom Lake (50) American River, Folsom Dam to Sacramento River (51)

Radioactivity

Radionuclides shall not be Present in concentrations that are deleterious to human, plant. animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.

Waters designated for use as domestic or municipal supply (MUN) shall not contain Concentrations of radionuclides in excess of the limits specified in California Administrative Code, Title 17, Chapter 5, Subchapter 1, Group 1, Article 4, Section 7019, Table 5.

Sediment

The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversety affect beneficial user

Settleable Material

Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses

Suspended Material

Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Tastes and **Odors**

Waters shalt not contain taste- or odor-producing substances in concentrations that impart undesireable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin - that cause nuisance, or otherwise adversely affect beneficial uses.

Temperature

The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such atteration in temperature does not adversely affect beneficial uses.

OBJECTIVES FOR INLAND SURFACE WATERS
TABLE 4-1 (Continued)

Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and tnterstate Waters and Enclosed Rays of California" inciuding any revisions thereto. A copy of this plan is included verbatim in the "Special Appendix, Plans and Policies."

At no time or place shall the temperature of any COLD intrastate water be increased more than 5°F above natural receiving water temperature.

At no time or place shall the temperature of WARM intrastate waters be increased more than 5°F above natural receiving water temperature.

The following objectives apply to the water bodies specified. To the extent of any conflict with the above, the more stringent objective applies.

		Applicable Water Body
(1)	Temperature changesdue to controllable factors shall be limited as follows: ● From 1 December to 15 March, the maximum temperature shall be 55°F. ● From 16 March to 15 April, the maximum temperature shall be 60°F. ● From 16 April to 15 May, the maximum temperature shall be 65°F. ● From 16 May to 15 October, the maximum temperature shall be 70°F. ● From 16 October to 15 November, the maximum temperature shall be 65°F. ● From 16 November to 30 November, the maximum temperature shall be 60°F.	Sacramento River, Source to Box Canyon Reservoir (9) Sacramento River, Box Canyon Darn to Shasta Lake (11)
(2)	The temperature in the epilimnion shall be less than or equal to 75°F or mean daily ambient air temperature, whichever is greater.	Lake Siskiyou (10)
(3)	The temperature shall not be elevated above 56°F in the reach from Keswick Dam to Hamilton City nor above 68°F in the reach from Hamilton City to the Eye Street Bridge during periods when temperature increases will be detrimental to the fishery.	Sacramento River, Shasta Dam to Colusa Basin Drain (13) Sacramento River, Colusa Basin Drain to Eye Street Bridge (30)

Toxicity

All waters shall be maintained free of toxic substances in concentrations that are toxic to or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration or other appropriate methods as specified by the Regional Board.

The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge, or, when necessary, for other control water that is consistent with the requirements for "experimental water" as described in Standard Methods for the Examination of Water and Wastewater, latest edition. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay.

In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate; additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available; and source control of toxic substances will be encouraged.

Turbidity

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.

Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between 0 and 50 Jackson Turbidity Units (JTU), increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 JTU. increaser shall not exceed 10 JTU.
- Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.

Exceptions to the above limits will be considered when a dredging operation can cause an increase in turbidity. In this case, an allowable zone of dilution within which turbidity in excess of limits can be tolerated will be defined for the operation and prescribed in a discharge permit.

The following objective applies to the water body specified. To the extent of any conflict with the above, the more stringent objective applies:

	Applicable Water Body
(1) Except for periods of storm runoff, the turbidity shall be less than or equal to 10 JTU.	Folsom Lake (50) American River, Folsom Dam to Sacramento River (51)

Final
Environmental Impact Report

White Slough Water Pollution Control Facility Expansion

SCH# 87072105

Prepared for:

City of Lodi, California

Prepared by:

Jones & Stokes Associates, Inc.
Sacramento, CA

June 1988

FINAL
ENVIRONMENTAL IMPACT REPORT
FOR
WHITE SLOUGH WATER POLLUTION CONTROL FACILITY EXPANSION
SCH #87072105

Prepared for:

***City* of Lodi**

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June 1988

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INTRODUCTION

This Final Environmental Impact Report (FEIR) has been prepared for the City of Lodi (City) in accordance with City requirements and the California Environmental Quality Act (CEQA) [Public Resources Code Section 21000 et seq.) and State CEQA Guidelines (14 California Administrative Code Section 15000 et seq.). The document includes the comment letters received during the required public review period, which began on April 27, 1988, and ended on June 10, 1988. During this time the Draft Environmental Impact Report (DEIR) was reviewed by various state and local agencies. Written comments were received from the following agencies: California State Office of Planning and Research, California Department of Fish and Game, California Department of Transportation, San Joaquin County Department of Planning and Building Inspection, and San Joaquin Council of Governments.

The DEIR, which is incorporated by reference into this FEIR, identified the potential environmental effects of a proposed expansion of the City's White Slough Water Pollution Control Facility, located 6.5 miles west-southwest of central Lodi in an agricultural area. The proposed project includes wastewater treatment process modifications and expansion within the current boundaries of the 655-acre treatment facility.

How to Use This Report

This report is divided into three sections: "Summary of Environmental Impacts," "Project Description," and "Comments on the Draft EIR and Responses to Comments. Each of these sections has its own purpose and serves to aid the .reader in fully understanding the project and its implications. A brief description of each section follows.

The "Summary of Environmental Impacts" section lists all of the potential impacts of the project and presents any mitigations that would reduce or eliminate project impacts. This section is taken directly from the DEIR. The impact summary is included to facilitate understanding of the comments and responses. The level of significance of each impact is identified in Table 1. This section is an overview intended for use during discussion of the project and does not include any detailed discussion of the identified impacts. Use of the summary only, without reading the supporting text, could lead to an incomplete understanding of the project.

The "Project Description" section presents a full hescription of the project, including its location, the project components, and any other relevant information. This section is included verbatim from the DEIR and is provided to aid the reader in understanding the project as well as the comments and responses.

The "Comments on the Draft EIR and Responses to Comments" section includes each letter received during the public review period. The letters are reproduced in the section, with the response to each letter immediately following. The responses are numbered to coincide with the numbering added to the letters.

SUMMARY OF ENVIRONMENTAL IMPACTS

The following list (Table 1) itemizes all Significant and less-than-significant direct impacts that were identified during the course of this environmental analysis. Growth-related impacts are discussed separately in the text that follows. Comments received on the Draft EIR did not result in changes to this summary evaluation. No direct significant, unavoidable adverse impacts have been identified in the course of evaluating the proposed treatment plant expansion project. Continued growth in the City of todi, which is accommodated by the proposed project, is expected to have significant unavoidable adverse effects on prime agricultural lands and the provision of storm drainage service.

This Summary should be used in conjunction with **a** thorough reading of the entire Draft EIR. ?he Summary is intended as an overview; the report serves as the basis for this Summary.

GROWTH-INDUCING IMPACTS

The proposed WPCF expansion would remove a major obstacle to growth in Lodi. In this sense, the project would be growth-inducing, although the city may control growth through its planning functions.

Assuming residential , commercial, and light industrial activities grow at similar rates, the WPCF expansion would allow the city's population to expand by approximately **18,200** persons. Thus, the city would grow about *40* percent.

If the city's recent growth rate **(3.8** percent per year) persists in the future, the growth increment allowed **by** the WPCF expansion would materialize in about **8-9** years. In comparison, if Lodi's growth rate were reduced to 2 percent per year, about **16** years of such growth could **be** accommodated.

Expansion of the city by **40** percent could have many important effects on surrounding agriculture, scenic values, wildlife habitats, the city's small town character, and the city's service systems. Some of these effects are potentially substantial adverse impacts. **A** few impacts would be unavoidable if the growth occurs, but many could be avoided or mitigated through careful management of growth unless the historically high growth rate persists. The city's present ongoing general plan revision process may' define such a growth management process.

In this report, a comprehensive assessment **of** the impacts resulting from the growth increment allowed by the WPCF expansion **is** presented, and

mitigation methods are generally described, and unavoidable impacts are identified. The development of a detailed growth management plan, however, is deferred to the impending general plan revision process.

The following is a summary of the growth increment impacts (see footnote explanation following):

- urbanization of 1,300 acres of currently rural lands adjacent to the city, more than 90 percent of which have prime agricultural soils supporting vineyards, orchards, or other agricultural production[a];
- construction of more than 6,500 residential units[b];
- creation of more than 6,000 jobs[b];
- increase in water demand of 5.5 MGD, requiring development of about seven wells or acquisition of new surface water rights[c,d];
- provision of several stormwater detention basins, requiring substantially larger acreages on a per capita basis than the current system[a,d];
- addition of 17–18 new police officers, seven to eight support staff, six to seven patrol cars, and office space to maintain the current level of police protection[d];
- addition of 18–19 new firefighters, equipment, vehicles, support staff, and a new station to maintain the current level of fire protection[d];
- provision of about 100 teachers and classrooms, support personnel, and support facilities to education about 3,000 additional students[d];
- acquisition and development of 36 acres of parkland[c,d];
- disposal of an additional 22,000 tons of solid waste per year, representing 2 percent of the estimated capacity of the new Harney Lane landfill[c,d];
- generation of at least 53,000 vehicle trips per day, causing significant congestion at certain intersections unless road system capacities are continuously enlarged[d,e];
- increase in carbon monoxide concentrations near congested intersections, possibly exceeding established health standards[c];
- increase in noise levels near roadways[c];
- potential for loss of important natural habitats and heritage oaks[e]; and
- decrease in water quality of the Mokelumne River and other surface waters from release of sediment during construction[e] and from ongoing urban runoff[a]; decrease in fish populations[c].

Table 1. Summary of Direct Project Impacts, Mitigation Measures, and Impacts of the Alternatives

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
A. Unavoidable Significant Adverse Impacts				
None.				
B. Mitigable, Significant Adverse Impacts				
Soils	Buildup of heavy metals in the effluent and sludge-irrigated soils, rendering them unusable after more than 100 years.	Require pretreatment of all industrial wastewater, emphasizing zinc removal.	Under Alternatives E1 and S, the use of the existing site for effluent disposal (under S) or an effluent and sludge disposal (under E1) would be greatly extended.	Under Alternative E2, 50 percent more acreage would be subjected to heavy metal buildup and become unusable after more than 100 years, Alternative S could feasibly be implemented utilizing only soils and locations considered suitable.
C. Potentially Significant, Mitigable Adverse Impacts				
Water Resources				
Groundwater Resources	Potential contamination of groundwater with nitrogen compounds and other pollutants if agronomic rates of effluent and sludge application are exceeded.	Expand monitoring to record application rates and pollutant concentrations in effluent and sludge, soils, and groundwater. Expand acreage of land disposal or implement offsite sludge disposal if groundwater is degraded.	Under Alternative S, agronomic rates of sludge application could be easily maintained, preventing groundwater pollution. Under Alternative E1, only about 20 percent of the site's nitrogen cycling capacity would be used, virtually eliminating the potential for groundwater poliution.	Alternative E2 would increase the land disposal acreage 50 percent and commensurately increase the potential for nitrogen loading of groundwater.
Biological Resources	Possible adverse effect on biological resources of the peripheral canal ponds from nutrients and toxics in groundwater inflow resulting from possible overapplication of effluent and sludge to adjacent agricultural lands.	Expand monitoring of groundwater quality as described immediately above.	Under Alternative E1, the potential for significant adverse effects would be virtually eliminated. Under Alternative S, the potential for toxic contamination would be largely eliminated.	None.

Table 1, Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
C. Potentially Significant, Mitigable Adverse Impacts (Continued)				
Public Health and Safety	Potential health hazard for full water contact recreationists in Dredger Cut.	Increase effluent disinfection to a standard of 2.2 MPN coliform per 100 ml, or conspicuously post Dredger Cut to prohibit full water contact recreation.	Under Alternative E2, the potential health hazard would be lessened but would still be potentially significant.	Under Alternative E1, the potential hazard would be further increased.
Public Services and Facilities				
Road System	Hauling of existing sludge on Harney Lane west of State Route (SR) 99, which is extremely sensitive to road surface damage. Approximately 300 trips required.	Avoid hauling on Harney Lane west of SR 99,	Impacts of the alternatives are similar to proposed project.	Under Alternative S, local county roads in the area between the WPCF arid Lodi could be damaged. This damage could be avoided by excluding disposal sites requiring access by Harney Lane, Ray Road, and Armstrong Road. Damage could be mitigated by slow haul speeds on these roads and road repair by the city as needed. Under Alternative S, mud and/or sludge could accumulate on local county roads. This could be avoided by hauling field vehicles and keeping haul vehicles off of exposed soils. It could be mitigated by roadway cleaning as needed.
D. 'Less-Than-Significant Impacts				
Water Resources				
Flood Hazard	No effect on flood depths, flood extent, or floodflow velocities.	None needed.	NA	None

Table 1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant Impacts (Continued)				
Water Resources (Continued)				
Flood Hazard (Continued)	Some potential for floodwater contamination by floods more frequent than 100-year flood due to effluent and sludge residuals in irrigated fields.	None available.	NA	Alternatives E2 and 5: Some potential for floodwater contamination east of I-5 by very infrequent floods.
Groundwater Resources	No effect on groundwater depth or direction of flow.	None needed.	NA	None
Surface Water Resources	Decrease in annual waste load discharged into Dredger Cut, but increase in the number of days and total volume of surface water discharge.	None needed.	NA	Alternative E2 would reduce both the volume of effluent and annual waste load discharged into surface waters when compared to the proposed project, Alternative S would increase the risk of sludge material being washed into surface waters.
Biological Resources	Loss of weedy vegetation in plant treatment works area and along irrigation system conveyances to be improved,	None needed.	NA	None
	Possible effect on fisheries, and wildlife in Delta waterways, and in marshes and peripheral canal ponds during overflow periods, due to net increases in discharged soluble nutrients.	None needed.	Under Alternative E1, the potential for adverse effects would be moderately increased. Under Alternative E2, the potential would be moderately decreased.	Under Alternative S, adverse impacts on biological resources in the sludge disposal study area would only occur if sludge were applied to lands supporting natural habitats. Agricultural acreage is readily available, however.

Table 1. Continued

Resource	Impacts	Mitigation Measures	impacts of the Alternatives: Significant impacts Reduced	impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant Impacts (Continued)				
Land Use	Treatment plant reconstruction within the existing plant area, and some Intensification of agricultural use on acreage currently used for irrigated agricultural.	None needed.	NA	Under Alternative E1, nutrient application to the city's fields would diminish to 20 percent of the current level, resulting in substantial reduction in agricultural production. Slowed heavy metal accumulation would extend the duration of intensive agriculture greatly. Under Alternative E2, cropping patterns would change, and cropping options would be reduced on an adjacent 305 acres acquired; fertilizer needs would diminish and fresh irrigation waters would become available to other users. Under Alternative S, 200-1,000 acres of agricultural land supporting field crops, alfalfa, or pasture in the area between the WPCF and Lodi would become subject to cropping limitations, and cropping patterns may change, Fertilizer needs would diminish. Farmers' ability to respond quickly to changing market demands would be decreased, although the city could compensate farmers' for such implied losses.

Table 1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant Impacts (Continued)				
Land Use (Continued)	Possible temporary annoyance of nearest residents due to onsite sludge drying prior to project construction. (See also "Air Quality" below.)	None needed.	NA	None.
	Provision for future fire station construction and staff occupancy within 500 feet of areas used for land disposal of undisinfected sludge, (See also "Public Health and Safety" below.)	None needed.	NA	None.
Public Services and Facilities				
Solid Waste Disposal	Disposal of nonhazardous sludge currently stored onsite, after partial drying, at a suitable landfill having adequate capacity.	Other than required drying to 50 percent solids component, none needed.	NA	None
	Potential for occasional landfilling of sludge high in heavy metals or other toxic substances at landfills appropriate to measured concentrations of hazardous substances.	Other than required testing of concentrations of hazardous substances and use of appropriate landfill site so indicated, none needed,	NA	None
Road System	Minor increase in local traffic flow for approximately 7 days as existing sludge is hauled to the Harney Lane landfill.	None needed.	NA	Alternative 5 would involve a minor increase in local traffic flow for short periods in the spring and fall.
	Closure of one lane of Thornton Road, which has low traffic volumes, to facilitate reconstruction of a concrete irrigation ditch, utilizing flagmen.	Other than use of flagmen, none needed.	NA	None

Table 1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D. Less-Than-Significant Impacts (Continued)				
Air Quality	Dust generation from construction activity.	Watering of exposed soils.	NA	None
	Odor emissions in a sparsely populated agricultural area from airdrying of existing sludge prior to disposal at a landfill site.	None needed.	NA	None
	Pollutant emissions from sludge-hauling truck engines.	None needed.	NA	None
	Pollutant emissions from open components of the treatment system and from cogeneration system fueled by digester gas.	None needed.	NA	None
	Occasional odor emissions during periods of treatment process upset or major blooms of algae in effluent storage ponds.	None needed other than restoration of design treatment process and pH adjustment, aeration, or chemical oxidation of storage ponds.	NA	Alternative S would result in odor emissions when sludge was partially dried at the plant and again when spread on agricultural lands in the study area. Sparse population near the plant and observance of a 500-foot buffer between disposal sites and residences would render the impact less than significant.
Noise	Noise emission from construction activities,	None needed.	NA	None.
	Noise emission from hauling of lagooned sludge to the landfill.	None needed.	NA	Alternative S would result in less-than-significant noise emissions from hauling sludge in spring and fall about five trips per day during normal work hours,
	Noise emissions from facility operations.	None needed.	NA	None.

Table 1. Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant Impacts Reduced	Impacts of the Alternatives: Other Impacts Caused
D, Less-Than-Significant Impacts (Continued)				
Public Health and Safety	Minor potential for increased nitrate levels in deeper groundwater utilized for domestic water supply,	None needed.	NA	NA
	Continued potential for bacterial contamination of any domestic water supply well placed within 500 feet of the effluent and sludge disposal fields (e.g., county fire station well),	Allow no domestic water supply wells to be drilled within 500 feet of the disposal areas.	NA	NA
Cultural Resources	Earth grading in previously graded areas.	If resources unexpectedly encountered, determine impact significance and develop mitigalion plan through services of a qualified archaeologist.	NA	Under Alternative S, weathering rates of undiscovered cultural resources in selected sludge disposal areas could accelerate, or such resources could be disturbed during field preparation. A known burial site in the area could be avoided by field marking or excluding the general area from disposal consideration.
Energy	Gasoline or diesel fuel consumption in hauling 290 25-ton truckloads of sludge 20 miles to the Harney Lane landfill during project construction.	None needed.	NA	Alternative S would require significant annual fuel consumption in hauling 610 (initially)-770 (at full utilization) 25-ton truck-loads of sludge 5 miles to agricultural fields, and additional fuel consumption in spreading the sludge.

Table 1, Continued

Resource	Impacts	Mitigation Measures	Impacts of the Alternatives: Significant impacts Reduced	Impacts of the Alternatives: Other impacts Caused
D. Less-Than-Signlficant Impacts (Continued)				
Energy (Continued)	Increased electrical energy consumption to pump and treat increased wastewater flows, and increased electrical generation from waste gas now being flared at the site.	None needed.	NA	None
Aesthetics and Recreational Environment	Creation of a concrete, egg-shaped digester extending 64 feet above ground in an existing industrial site to be partially visible to freeway users but generally not to recreationists in neighboring aquatic areas.	None needed, but installation could be utilized for display of the city's logo.	NA	None
	Intermittent odors could diminish the aesthetic character of some fishing locations. (See also "Air Quality" above.)	None needed.	NA	None

Notes : a significantly adverse, unavoidable
b significant but not adverse
c potentially significant, ability to mitigate unknown
d significant fiscal impact
e significantly adverse, mitigable

THE ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Alternative E2, Expanded Irrigation, is the environmentally superior alternative because it minimizes the potential risk of adverse impacts on Delta waterways and represents fuller use of wastewater nutrients for agricultural production. However, *it* is noted that the proposed project is not expected to cause a significant adverse impact on the Delta water quality and biological resources. The proposed project also entails significant use of wastewater for agricultural production.

The sludge disposal alternative considered herein, Alternative *S*, involving offsite sludge disposal by mechanical means, is not considered environmentally superior to the proposed project. If the proposed project is accompanied by careful monitoring and control of sludge application rates to match nitrogen-uptake capacities of the city's agricultural fields, a significant impact to groundwater quality would not be expected. Thus, Alternative S would offer no benefit in this regard. However, Aiternative S does imply substantially higher costs from increased labor and fuel consumption, and possibly from local road repair.

ISSUES REMAINING TO BE RESOLVED

Subsequent to certifying that this document has been completed in compliance with CEQA, the city must:

- o reaffirm its decision to adopt the proposed project or select one or more of the alternatives to the proposed project; and
- o adopt or reject mitigation measures that reduce significant or potentially significant adverse impacts to less-than-significant levels, and, in the case of rejection, articulate the overriding considerations.

In addition, any other agencies having discretionary authority over the project must exercise that authority and establish conditions for approval of the project. In particular, the RWQCB must reestablish water quality standards for discharged effluent and receiving waters and must approve a method of sludge disposal.

PROJECT LOCATION

The City of Lodi is located at the juncture of the Sacramento and San Joaquin Valleys, about 50 miles east of the Carquinez Strait and 25 miles west of the Sierra Nevada foothills. Situated between Sacramento and Stockton on State Highway 99, it is the northernmost city of San Joaquin County (Figure 3-1).

The WPCF is located 6.5 miles west-southwest of the central city, or about 4.5 miles beyond the present city limits. This agricultural area is about 2 miles east of White Slough, a component of the eastern portion of the San Joaquin-Sacramento River Delta System (Figure 3-2). The proposed expansion of the physical plant would be within the existing plant area, and proposed effluent and sludge disposal would continue to occur on city-owned agricultural lands surrounding the site. The plant area and the city's agricultural lands constitute "project site" as described in this report.

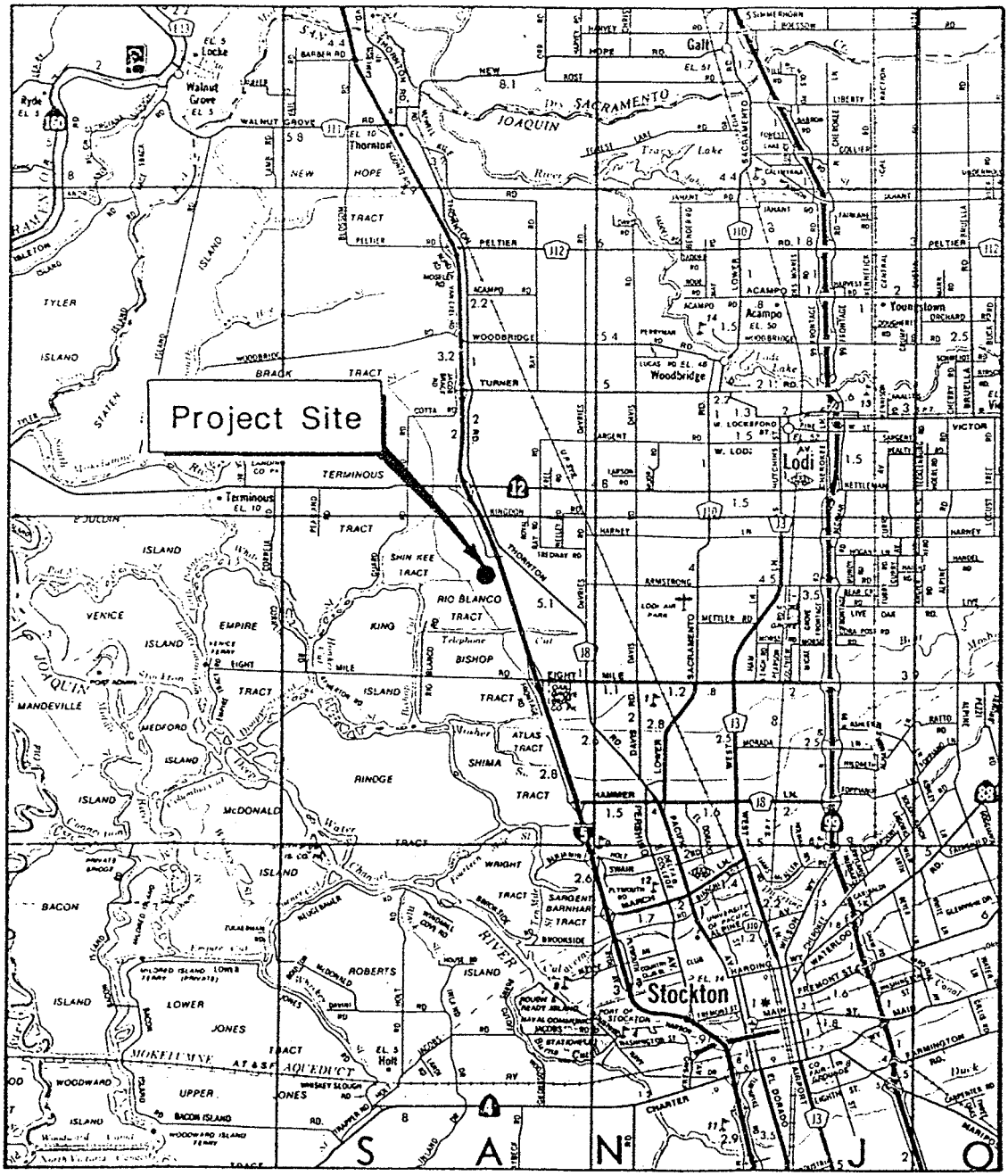
PROJECT OBJECTIVE

As described in Chapter 1, the unused WPCF treatment capacity is very small and continues to diminish. One objective of the proposed expansion is to increase wastewater treatment capacity so that the City of Lodi can continue to grow over the next 1 to 2 decades. Expansion would eliminate an imminent growth impediment, which will probably materialize within the next two years, prior to the anticipated completion in early 1991. (See "Growth-Inducing Imparts" in Chapter 4.) Upon completion of the proposed project, the city's growth rate could be managed independently of wastewater treatment capacity for the ensuing 1 to 2 decades.

A second objective of the proposed expansion is to imprcve the quality of effluent being discharged to surface waters.

PROJECT AREA DESCRIPTION

The existing WPCF, site of the proposed improvements, is within low-lying agricultural lands bordering sloughs and distributary river channels of the San Joaquin-Sacramento River Delta system. Site elevation is between 5 and 10 feet above mean sea level. The surrounding area is entirety rural and sparsely populated. The nearest farm residence is about one-quarter mile from the site on an adjoining ownership. The mean annual precipitation is about 16 inches, and irrigation is extensive in the area for the production of field crops and pasture forage.



Base Mop Courtesy of **AAA**

FIGURE 3-1. LOCATION MAP CITY OF LODI WHITE SLOUGH WATER POLLUTION CONTROL FACILITY

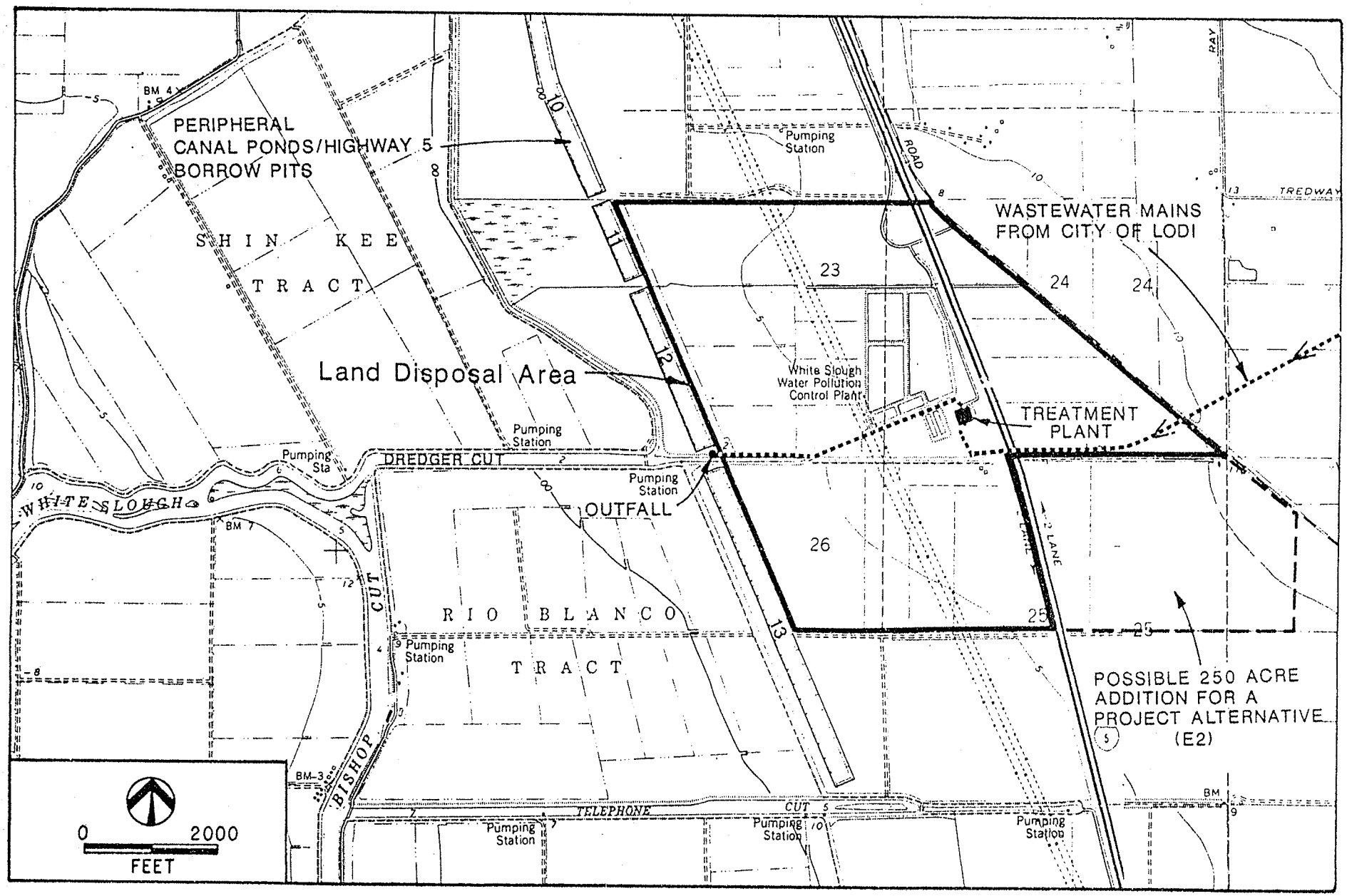


FIGURE 3-2. WHITE SLOUGH WATER POLLUTION FACILITY - SITE PLAN AND VICINITY

Base Map: USGS 7.5' "Terminous" and "Lodi South" quadrangles

The site also lies within a major transportation and utility corridor connecting northern and southern California. Both I-5 and three major power transmission lines pass through the facility (Figure 3-2).

Lying at the edge of the Delta, the WPCF is adjacent to marsh and aquatic habitats important to both migratory birds and resident fish and wildlife. Ponds of the discontinued peripheral canal project, dredged cuts connecting sloughs of the San Joaquin River, irrigation canals, and a tidal marsh all lie immediately west of the facility (Figure 3-2).

EXISTING WASTEWATER FACILITIES

Overview

The existing WPCF consists of an activated sludge system presently having approximately 6.2-MGD capacity for domestic wastes, and an aerated lagoon and storage pond system of 3.75-MGD capacity for industrial waste. Industrial effluent and a portion of the treated domestic effluent (28 percent, between 1983 and 1986) are used for irrigation of an adjacent 655 acres of city-owned agricultural land (Figure 3-2). The remaining treated domestic effluent is discharged to Dredger Cut, a waterway connecting to White Slough (Figure 3-2). Waste methane gases from the treatment process are used for space and digester heating or flared at the plant site.

Industrial System

The City of Lodi maintains an industrial wastewater collection system separate from the domestic collection system. The industrial system primarily collects wastewater from Pacific Coast Producer's (fruit and vegetable canning), and also from Mason Fruit Company (cherry brining) and Valley Industries (tow bar manufacture). The General Mills plant wastewater, however, is discharged into the domestic system.

Current industrial wastewater flows peak at near the system capacity of 3.75 MGD in August (the peak canning season), but for about one-half of the year the flows average less than 0.15 MGD. The average total annual flow is nearly 300 MG. Because expansion of the Pacific Coast Producer's cannery appears unlikely, the city's industrial system is considered sufficient for the foreseeable future (Black & Veatch 1987b).

Industrial flows pass through the WPCF without treatment. All of the effluent is disposed of by irrigation on city-owned agricultural lands in summer, with storage of winter flows in earthen ponds at the plant site.

Domestic System

Collection

Wastewater flows from virtually ail residential and commercial developments within the city, as well as industrial flows from General Mills and some smaller industrial developments, are collected in the domestic system. No developments outside of the city are served, and a city ordinance does not allow such service.

Flows in the domestic system are much more constant than in the industrial system. The winter 1987/1988 flow is about 5.9 MGD, or about 95 percent of the plant capacity of 6.2 MGD. The capacity of the plant was recently increased from 5.8 MGD by improvement of the aeration system and installation of a more efficient fine bubble diffuser unit. Monthly flows vary on the order of 0.1 to 0.2 MGD from the annual average, and no significant infiltration from groundwater is known to occur (Forkas pers. comm.).

Treatment

Preliminary treatment of the domestic wastewater is accomplished by comminutors and detritors. Primary treatment consists of three rectangular clarifiers. Secondary treatment facilities consist of three activated sludge aeration basins with a fine bubble aeration system, and five rectangular secondary clarifiers. The aeration system is driven by three rotary blowers. The treated effluent is then disinfected through chlorine contact tanks and dechlorinated prior to surface water discharge.

Filamentous sludge bulking, poor settling, and poor hydraulics in the rectangular clarifiers have been the primary contributors to the plant's inability to consistently produce an effluent meeting the quality requirements established via a NPDES permit from the RWQCB (Appendix D).

Effluent Disposal

Untreated wastewater from the industrial system and treated domestic system flows are stored in earthen holding ponds having a 120-MG capacity (Figure 3-3). Treated domestic effluent is either diverted (or stored) for irrigation of city-owned agricultural fields (Figure 3-4) or conveyed via a 3,500 foot, 48-inch diameter pipe to an outfall in Dredger Cut, a waterway connecting to White Slough.

The current policy for choice of effluent disposal has been established by the WPCF operations staff in conformance with requirements of the current NPDES permit as follows:

- All industrial wastewater is used for agricultural irrigation. During the irrigation season, industrial effluent is conveyed directly to irrigation. Otherwise, flow is diverted to storage until the following irrigation season.

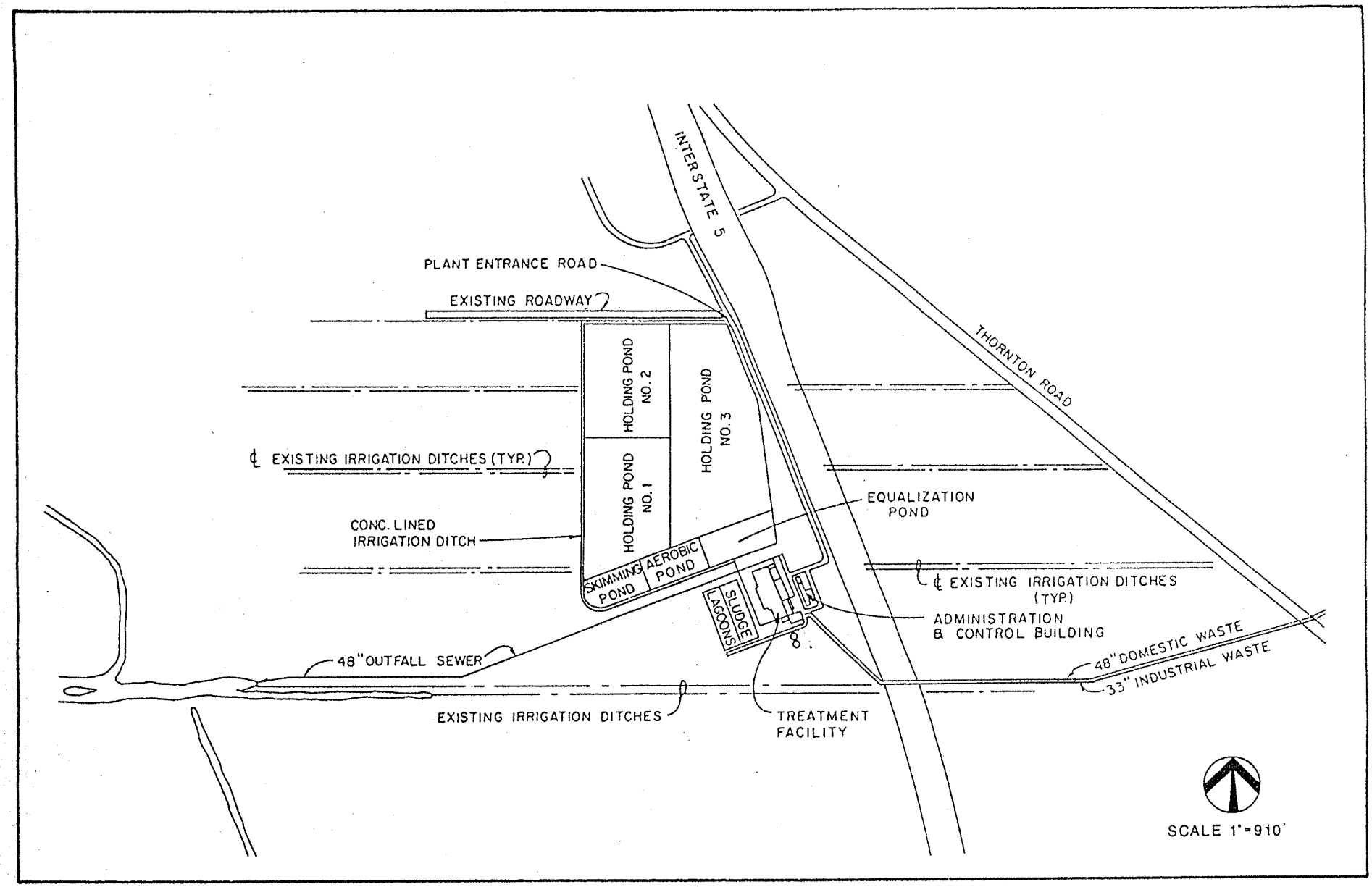


FIGURE 3-3. WHITE SLOUGH WATER POLLUTION CONTROL FACILITIES

Source: Black & Veatch 1987b

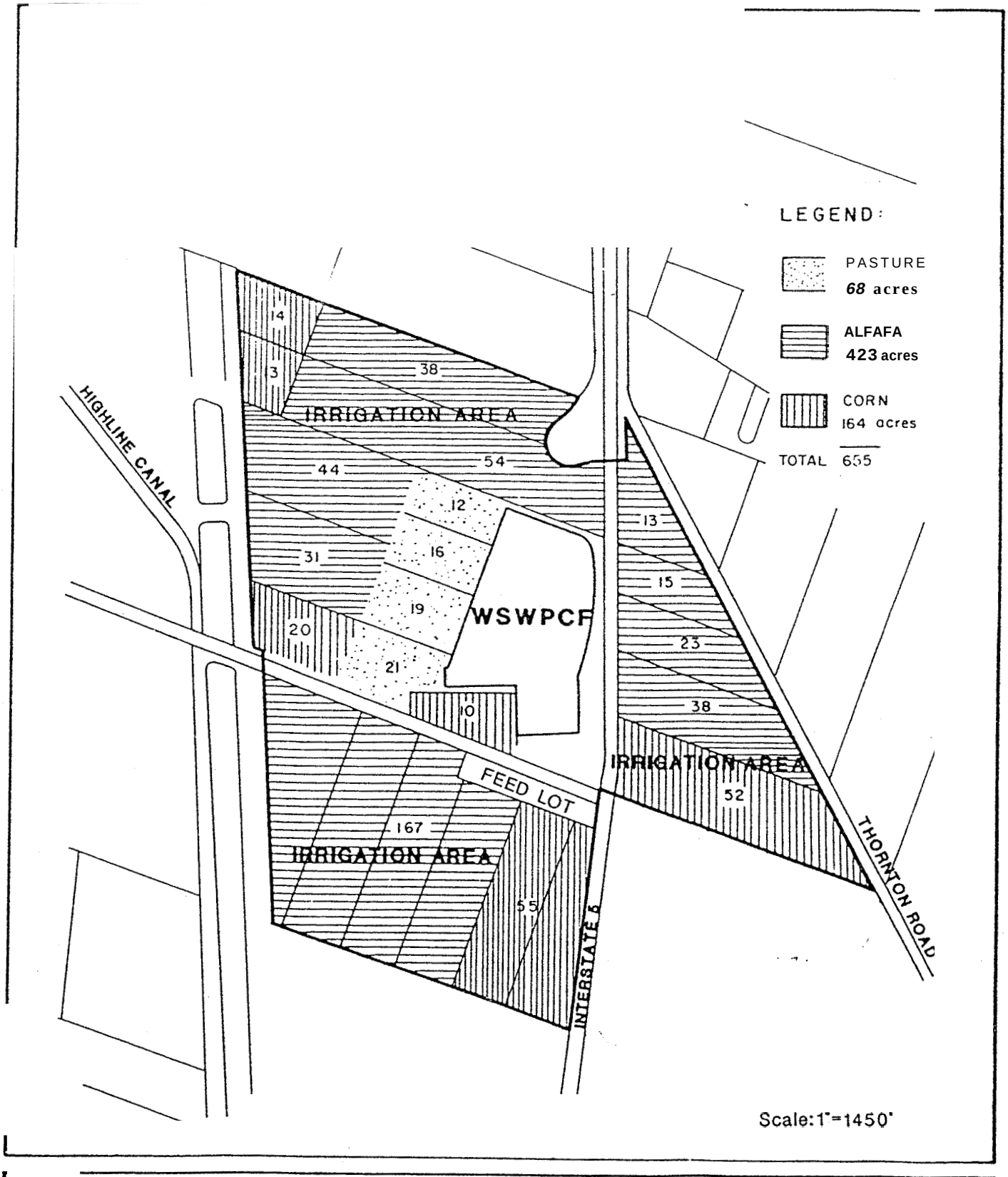


FIGURE **3-4.** IRRIGATION FIELDS **AND** CROP CONFIGURATION 1987

Source: Black & Veatch 1987b

- o Domestic effluent is diverted to or stored for irrigation when any one of the following conditions exists:
  - The irrigation flow demand from the city's 655-acre croplands exceeds the industrial wastewater supply.
  - The dissolved oxygen concentration in White Slough or Bishop Cut is less than 5 mg/l, based on daily monitoring.
  - High concentrations of organics or dye in the domestic influent result in inadequate treatment.
  - Sludge bulking and poor clarifier performance result in inadequate separation of solids from the effluent.
  - Other NPDES permit requirements cannot be met.

Inadequate treatment or separation of solids is usually indicated by monthly average effluent concentrations of biochemical oxygen demand (BOD) or total suspended matter (TSM) exceeding the NPDES permit limits of 20 mg/l each in late summer or 30 mg/l each during the remainder of the year, or by weekly or daily concentrations exceeding corresponding limits (Table 3-1). Diversion of domestic effluent to irrigation due to effluent or receiving water quality problems has been occurring an average of approximately 3 days per month.

The wastewater irrigation area, shown in Figure 3-4, is currently used for the production of alfalfa, corn, and pasture grasses. From 1983 to 1986, an annual average of 756 MG were applied to this acreage, although the irrigation capacity has recently been estimated to be 817 MG (Black & Veatch 1987b). The capacity is limited by storage pond capacity and irrigation water demand. This irrigation capacity is sufficient for land disposal of ail of the current industrial system flow (300 MG) plus 24 percent of the current domestic system flow (25 percent of 2,190 MG) on an annual basis. To bring actual irrigation application up to capacity, however, several identified improvements to the effluent irrigation conveyance system need to be made.

Sludge Disposal

Currently, primary sludge is thickened in primary sedimentation tanks, and sludge from the secondary treatment facilities is thickened by dissolved air flotation. Both sludges are digested in anaerobic digesters and then stored in two sludge lagoons. The lagoons are intended to accomplish minor sludge dewatering, and the sludge is to be periodically removed for use on local agricultural land.

Sludge has not been removed from the lagoons for several years, however. The sludge in the lagoons currently overflows into the industrial wastewater influent channel. Combining with the industrial wastewater flow, the sludge flows with the effluent to the agricultural fields, or the irrigation storage ponds.

Table 3-1. Existing Effluent Limitations for Surface Water Discharge

Constituents	Units	Monthly Average	Weekly Average	Monthly Median	Daily Maximum
July 1 through October 31:					
BOD[a]	mg/l	20[b]	40[b]	--	50[b]
	lbs/day	967[b]	1,935[b]	--	2,419[b]
TSM	mg/l	20[b]	40[b]	--	50[b]
	lbs/day	967[b]	1,935[b]	--	2,419[b]
Settleable matter	ml/l	--	--	--	0.1
Chlorine residual	mg/l	--	--	--	0.1
Total coliform organisms	MPN/100 ml	--	--	23	500
Oil and grease	mg/l	10[b]	--	--	15[b]
	lbs/day	484[b]	--	--	726[b]
November 1 through June 30:					
BOD[a]	mg/l	30[b]	45[b]	--	50[b]
	lbs/day	1,451[b]	2,177[b]	--	2,419[b]
TSM	mg/l	30[b]	45[b]	--	50[b]
	lbs/day	1,451[b]	2,177[b]	--	2,419[b]
Settleable matter	ml/l	--	--	--	0.1
Chlorine residual	mg/l	--	--	--	0.1
Total coliform organisms	MPN/100 ml	--	--	23	500
Oil and grease	mg/l	10[b]	--	--	15[b]
	lbs/day	484[b]	--	--	726[b]

Notes:

[a] 5-day, 20°C BOD.

[b] Based upon a design treatment capacity of 5.8 MGD.

Source: NPDES Permit No. CA0079243, CVRWQCB, Order No. 86-041, February 28, 1986.

PROPOSED WPCF EXPANSION

Overview

The proposed project is the expansion through system improvements of the White Slough WPCF domestic system capacity to 8.5 MGD, an increase of 2.3 MGD (36 percent). Through irrigation system improvements, maximum use would be made of the existing city-owned agricultural lands for disposal of all industrial wastewater and as much treated domestic effluent as possible. On an annual average daily basis, about 1.5 MGD of the domestic system flow could be disposed of on the existing agricultural lands. The remaining domestic system flow (ultimately 7.0 MGD on an annual average daily basis) would be released after treatment to Delta waters at the current outfall in Dredger Cut. The wastewater treatment would be modified, however, to significantly improve the quality of this effluent, as described under "Planned Guality of Discharged Effluent" below.

The proposed project also includes system improvements to retain sludge in the sludge storage lagoons during the non-irrigation season and to pump sludge directly to the irrigation channel during periods of flood irrigation of the city's agricultural lands. An analysis of nitrogen cycling indicates that this mode of sludge disposal, together with effluent disposal up to the site's irrigation capacity, can continue to be accommodated on the city's acreage at least until another plant expansion (beyond 8.5 MGD) is needed (Black & Veatch 1987a). Supplemental acreage would then be needed.

Finally, the project includes the installation of a 250-kilowatt generator to produce power from combustion of the digester gases.

Treatment and Disposal System Improvements

The proposed project entails replacement of existing rectangular secondary clarifiers (sedimentation basins) with two circular secondary clarifiers, and conversion of the existing clarifiers to chlorine contact tanks. The new clarifiers, each with a diameter of 100 feet and depth of 15 feet, would be lccated within the existing facility (Figure 3-5). Two new primary clarifiers and an aeration basin would also be constructed.

To improve handling and disposal of liquid digested sludge, sludge storage lagoons would be expanded and modified and piping and pumping improvements would be made to allow direct sludge discharge from the lagoons into the irrigation channel when irrigation is underway. A new sludge digester, 50 feet in diameter and 80 feet in height, would also be constructed. To facilitate lagoon reconstruction and to retain the capacity of the city's lands to accept sludge in the future, the sludge currently stored onsite would be disposed of at the county's Harney Lane landfill site. To monitor effects of future sludge disposal, groundwater monitoring wells would be constructed on the city's irrigated lands.

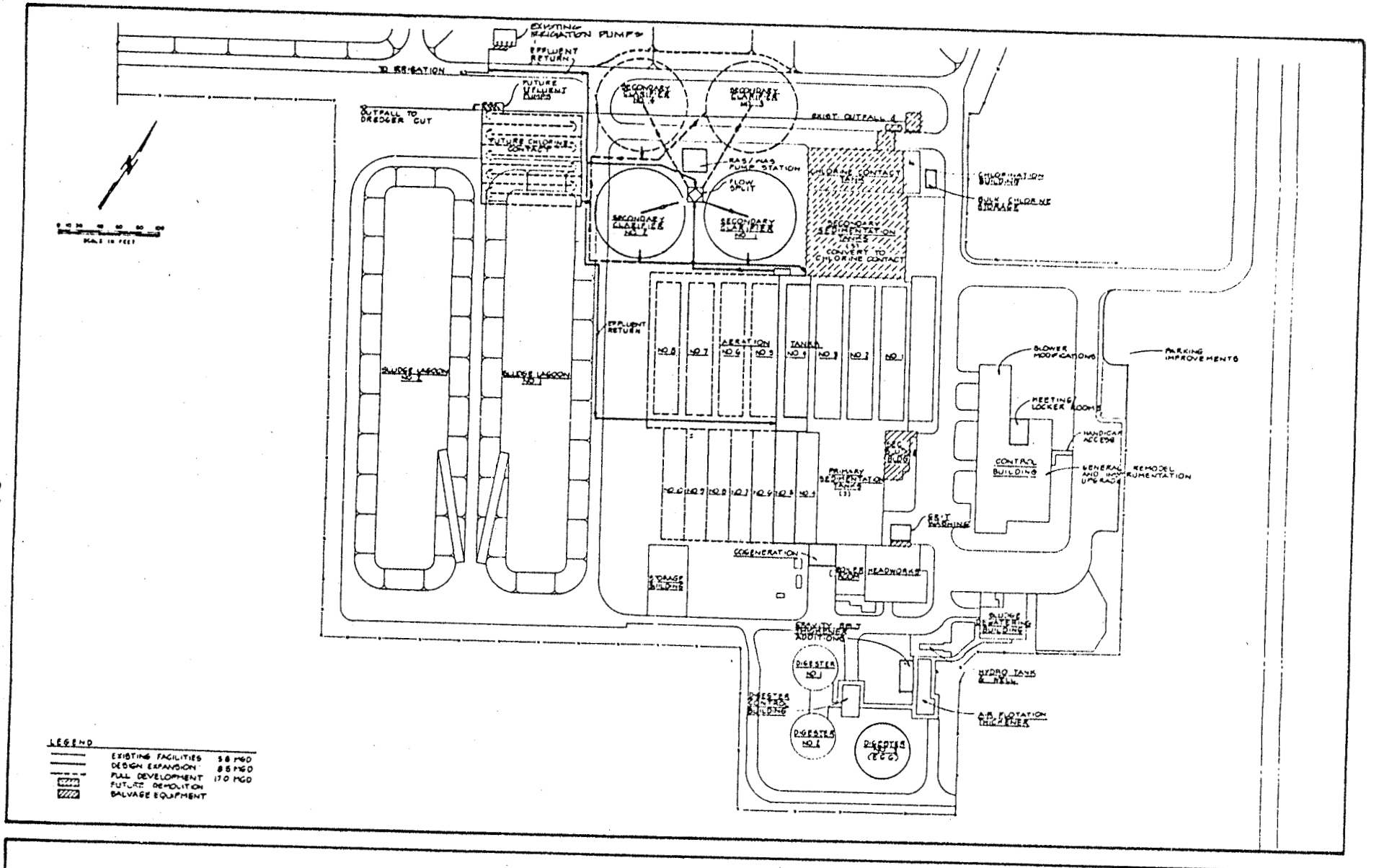


FIGURE 3-5. SITE PLAN, WPCF EXPANSION

Source: Black & Veatch 1987b

Other treatment process improvements are proposed. These include headworks improvements, plant effluent box modifications, control building modifications, gravity belt thickener improvements, and upgrade of existing sludge digesters.

To approach full utilization of the irrigation capacity of the city's lands, current deficiencies in the wastewater irrigation conveyance system would be eliminated as follows:

- modification of existing irrigation pumps,
- provision of a standby tailwater pumping capacity,
- enlargement of a concrete distribution ditch capacity, where inadequate (400 feet prior to 1-5 and along Thornton Road),
- protection of diversion structures along the ditch from erosion,
- diversion of flows in adjacent county road drainage ditches away from the system's irrigation runoff return system that recycles to the effluent storage ponds, and
- lining of a long feeder ditch supplying the fields north and west of the ponds.

Planned Quality of Discharged Effluent

installation of the proposed clarifiers and other components, in conjunction with aeration system improvements recently completed, would allow the WPCF to produce domestic effluent having 10 mg/l or less BOD and suspended solids more than 90 percent of the time ("10/10 treatment"]. Thus, although the total wastewater flow would increase, a higher effluent quality would be produced than is currently required, and degradation of surface waters should be reduced. When treated domestic effluent failed to meet the NPES permit requirements, it would continue *to* be diverted to or stored for irrigation. The current policy for effluent disposal described earlier would continue to govern WPCF operations.

Proposed Project Costs

Total project costs are estimated to be $8.1 million (Fiorucci pers. comm.). Operation and maintenance costs would be expected to increase 20-35 percent over the current situation (Forkas pers. comm.).

COMMENTS ON THE **DRAFT** EIK AND RESPONSE TO COMMENTS

OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO. CA 95814

June 10, 1988

Jack Ronsko, DPW
City of Lodi
221 West Pine Street
Lodi, CA 95241-1910

Subject: White Slough Water Pollution Control Facility Expansion
SCH# 87072105

Dear Mr. Ronsko:

The State Clearicghouse submitted the above named draft Environmental Impact Report (EIR) to selected state ageccies for review. The review period is closed acd the comments of the individual agency(ies) is(are) enclosed. Also, on the enclosed Notice of Completion, the Clearicghouse hss checked which agencies have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the package is cot in order, please notify the State Clearinghouse immediately. Your eight-digit State Clearinghouse number should be used so that we may reply promptly.

1-1

Please cote that recent legislation requires that a responsible ageccy or other public ageccy shall only make substactive comments on a project which are within the area of the agency's expertise or which relate to activities which that agency must carry out or approve. (4B 2583, Ch. 1514, Stats. 1984.)

These comments are forwarded for your use in preparing your final EIR. If you need more information or clarification, we suggest you contact the commenting agency at your earliest cocveciecce.

Please contact Loreen McMahon at 916/445-0613 if you have any questions regarding the environmental review process.

Sincerely,

David C. Nunenkamp
Chief
Office of Permit Assistance

cc: Resources Agency

Enclosures

Mail to: State Clearinghouse, 1400 Tenth Street, Room 121, Sacramento, CA 95814 — 916/445-0613

NOTICE OF COMPLETION AND ENVIRONMENTAL DOCUMENT TRANSMITTAL FORM

See NOTE Below
SCH # 87072105

1. Project Title: White Slough Water Pollution Control Facility Expansion
2. Lead Agency: City of Lodi — 3. Contact Person: Jack Ronsko, DPW
3a. Street Address: 221 West Pine Street — 3b. City: Lodi
3c. County: San Joaquin — 3d. Zip: 95241-1910 — 3e. Phone: 209/333-6706
PROJECT LOCATION 4. County: San Joaquin — 4a. City/Community: Lodi
4b. Assessor's Parcel No.: None — 4c. Section: 23,24,25,26 — Twp.: T3N — Range: R5E
5a. Cross Streets: Interstate 5/Thorton Road — 5b. For Rural, Nearest Community: Lodi
6. Within 2 miles: a. State Hwy #: 12 — b. Airports: 0 — c. Railways: UPRR — d. Waterways: White Slough, Bishop Cut

7. DOCUMENT TYPE

CEQA
01. ___NOP — 06. ___SCE
02. ___Early Cons — 07. ___NOC
03. ___Neg Dec — 08. ___NOD
04. X Draft EIR
05. ___Supplement/Subsequent EIR (Prior SCH No.: _____)

NEPA
09. ___NOI — 11. ___Draft EIS
10. ___FONSI — 12. ___FA

OTHER
13. ___Joint Document
14. ___Final Document
15. ___Other: _____

8. LOCAL ACTION TYPE
01. ___General Plan Update
02. ___New Element
03. ___General Plan Amendment
04. ___Master Plan
05. ___Annexation
06. ___Specific Plan
07. ___Community Plan
08. ___Redevelopment
09. ___Rezone
10. ___Land Division (Subdivision, Parcel Map, Tract Map, etc.)
11. ___Use Permit
12. ___Waste Mgmt Plan
13. ___Coastal Ag Preserve
14. X Other: Utility expansion

9. DEVELOPMENT TYPE
01. ___Residential: Units _____ Acres _____
02. ___Office: Sq. Ft. _____ Acres _____ Employees _____
03. ___Shopping/Commercial: Sq. Ft. _____ Acres _____ Employees _____
04. ___Industrial: Sq. Ft. _____ Acres _____ Employees _____
05. ___Water Facilities: MGD _____
06. ___Transportation: Type _____
07. ___Mining: Mineral _____
08. ___Power: Type _____ Watts _____
09. X Waste Treatment: Type domestic wastewater
10. ___OCS Related
11. ___Other: _____

10. TOTAL ACRES: 763 — 11. TOTAL JOBS CREATED: _____

12. PROJECT ISSUES DISCUSSED IN DOCUMENT

01. X Aesthetic/Visual	08. X Flooding/Drainage	15. ___Septic Systems	23. X Water Quality
02. X Agricultural Land	09. ___Geologic/Seismic	16. X Sewer Capacity	24. X Water Supply
03. X Air Quality	10. ___Jobs/Housing Balance	17. ___Social	25. X Wetland/Riparian
04. X Archaeological/Historical	11. ___Minerals	18. ___Soil Erosion	26. X Wildlife
05. ___Coastal Zone	12. X Noise	19. X Solid Waste	27. X Growth Inducing
06. X Economic	13. X Public Services	20. X Toxic/Hazardous	28. ___Incompatible Landuse
07. ___Fire Hazard	14. X Schools	21. X Traffic/Circulation	29. ___Cumulative Effects
		22. X Vegetation	30. ___Other: _____

13. FUNDING (approx) Federal $ 0 — State $ 0 — Total $ 8.1 million

14. PRESENT LAND USE AND ZONING: Present use: water pollution control facility.
Zoning: Public

15. PROJECT DESCRIPTION:

Plant capacity expansion from 6.2 to 8.5 MGD. Plant process improvement to produce higher quality effluent discharged to Delta waterways.

CLEARINGHOUSE CONTACT: LOREEN MCMAHON 916-445-0613
Loreen McMahon

STATE REVIEW BEGAN: 4-27-88

DEPT REV TO AGENCY: 6-3

AGENCY REV TO SCH: 6-8

SCH COMPLIANCE : 6-10

AQMD/APCD: 28 (Resources: 4/30)

W/C	N/C	
		• Resources
		[redacted]
		[redacted]
		• Fish & Game
		[redacted]
		• DWR
		• Reclamation
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		• ARB
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		[redacted]
		Other: delta unit

W/C	N/C	
		• RWQCB# 5
		• Caltrans# 10
		[redacted]
		[redacted]
		[redacted]
		• Health
		[redacted]
		• PUC
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***Please return this form with any comments.

T8

Response 1-1

Comment **acknowledged.**

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF TRANSPORTATION
PO. BOX 2048 (1976 E. CHARIER WAY)
STOCKTON CA 95201
(209) 948-7906

Jone 3, 1988

10-SJ-5-37.38
City of Lodi
White Slough Water
Pollution Control Facility
Draft EIR/SCH 987072105

Ms. Loreen McMahon
State Clearinghouse
1400 Tenth Stieet
Sacramento, CA 95814

Dear Ms. McMahon:

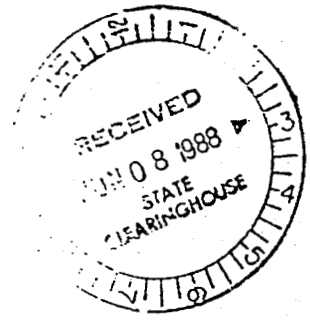
Caltrans has reviewed the Draft EIR for the White Slough Water Pollution Control Facility Expansion and offers no comment at this time. 2-1

Thank you for the opportunity to comment on the EIR. Any questions you have concerning this review may be directed to Al Johnson at Caltrans, telephone (209) 948-7838.

Very truly yours,

for DANA COWELL
Chief, Transportation
Planning %ranch

Attachment
cc: J Ronsko/City of Lodi
P Verdoorn/SJCCOG



Response **2-1**

Caltrans' absence of comment is acknowledged.

SAN JOAQUIN COUNTY
DEPARTMENT OF PLANNING AND BUILDING INSPECTION

1810 E. HAZELTON AVE., STOCKTON, CA 95205
PLANNING PHONE 209/468-3120
BUILDING PHONE 209/468-3123

CHET DAVISSON
Director
JERRY HERZICK
Deputy Director
TOM WALKER
Deputy Director

May 24, 1988

Jack Ronsko
City of Lodi
221 West Pine Sreet
Lodi, CA 95241-1410

Dear Mr. Ronsko:

RE: WHITE **SLOUGH** WATER POLLUTION CONTROL FACILITY EXPANSION
DRAFT EIR

We have reviewed the Draft EIR for the White Slough Treatment Plant and offer the following comments:

1. Pages 5-55 of the draft notes that unless the level of disinfection of the effluent is increased, an increase in the total pathogenic bacteria could be expected. The Draft EIR also notes that water skiing and swimming occur in the area. We would recommend that as part of the project, a higher level of disinfection be addressed to protect the recreational use of the Delta. **3-1**

2. In addition, the borrow ponds and its adjoining areas are used by recrsationists, mainly for fishing. Any potential hazard to individuals **from** the total facility should be discussed. **3-2**

Thank you for the opportunity to review the document.

Sincerely,

Peggy Keranen

Peggy Keranen
Senior Planner

PK:ET:bc

c: 2.1.02.02

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CITY OF LODI
PUBLIC WORKS DEPARTMENT

Response 3-1

As noted on page 5-56 of the DEIR, either achieving a higher level of effluent disinfection or posting conspicuous warnings to prevent full body contact recreation in Dredger cut would protect the recreational users of the Delta.

Response 3-2

As stated on page 5-17 of the DEIR, proposed changes in effluent discharged to surface waters would not adversely affect water quality or uses of the peripheral canal ponds. On page 5-20, it is noted that during infrequent, major flood events, effluent discharged to Dredger Cut and diluted by floodwaters could enter the peripheral canal ponds. No available information suggests such an event would seriously affect the current uses of the ponds.

On page 5-31 of the DEIR, it is reported that groundwater monitoring data do not indicate nitrogen contamination of groundwater from crop irrigation by treated wastewater. On page 5-15 and 5-50 it is noted that most groundwater flow under the irrigated fields is away from the peripheral canal ponds. It is therefore unlikely, although possible, that ongoing land treatment potentially could contribute nitrogen to groundwaters entering the peripheral canal ponds and thereby further a eutrophication process therein. Such eutrophication, resulting from dissolved oxygen depletion, would not represent a hazard to fishermen, however.

In conclusion, other than the potential hazard in Dredger Cut noted in Comment 3-1, no potential hazard to individuals is presented by the proposed project.

SAN JOAQUIN COUNTY COUNCIL OF GOVERNMENTS

1860 EAST HAZELTON AVENUE
STOCKTON, CALIFORNIA 95205
TELEPHONE (209) 944-2233

May 19, 1989

Mr. Jack Ronsko
Department of Public Works
City of Lodi
221 West Pine Street
Lodi, CA 95241-1910

Dear Mr. Ronsko:

The San Joaquin County Council of Governments has completed its review of the Draft Environmental Impact Report for the proposed White Slough Water Pollution Control Facility Expansion.

The Council of Governments has no comments on this proposal. The project will not have any effects on local traffic systems beyond those which are sufficiently addressed in the document. 4-1

We are returning the document so that you may use it elsewhere, if necessary.

Thank you for the opportunity to comment on this proposal. If you have any questions please call.

Sincerely,

Douglas Reed
Planner

cc: Terry Barrie, Caltrans District 10

Response 4-1

The council's **absence** of comment is **acknowledged.**

Chron

6-1-88

1. Projects Coordinator
Resources Agency

2. Jack Ronsko
City of Lodi
221 West Pine Street
Lodi, CA 95241-1910

Draft Environmental Impact Report (EIR) for the White Slough water Pollution Control Facility Expansion, San Joaquin County (SCH 87072105)

The Department of Fish and Game (Department) has reviewed the Draft EIR. It is proposed to expand the capacity of the City of Lodi Waste Treatment Facility fron 6.2 to 8.5 million gallons per day. Plant process improvements art proposed which would produce higher quality effluent (10 mg/L) for biological oxygen demand and total suspended matter,

A potential impact identified was to the water quality of the peripheral canal ponds, The over application of combined effluent sludge to the sludge disposal fields could result in ground vater contamination. Pollutants could enter the ponds as effluent ground water. Proposed mitigation is water quality monitoring.

The Department generally concurs with the Draft EIR and recommends alternative E2 (expanded irrigation) as the environmentally superior alternative. However, the Draft EIR is inadequate in its dealing with potential water quality impacts to the peripheral canal ponds. Monitoring for adverse water quality is documentation of impacts and can not be considered as mitigation.,. The Draft EIR should be revised to provide adequate mitigation for water quality impacts to the peripheral canal ponds. 5-1

If the Department can be of further assistance, please contact James D. Messersmith, Regional Manager, Region 2, 1701 Nimbus Road, Rancho Cordova, CA 95670, telephone (916) 355-0922.

Pete Bontadelli

Pete Bontadelli
Director

Response 5-1

The department's preference for Alternative **E2**, Expanded trrigation, is acknowledged.

Response 5-2

The commenter correctly states that monitoring for adverse water quality is documentation of impact but is not, -by itself, mitigation. For this reason, a discussion of an appropriate course of action should groundwater degradation be observed at the wastewater disposal fields was presented cn page **5-21** of the DEIR. The commenter is directed to that statement, reproduced here:

> If significant degradation ***of*** groundwater quality is observed, the **city** and the RWQCB should assess the situation and take appropriate action. **This** action might include expanding the city's acreage for sludge and effluent disposal (Alternative E2), or instituting offsite sludge disposal (Alternative S), or a combination thereof.

The referenced alternatives are discussed in detail in the DEIR.

The commenter **is** also referred to Response 3-2, which describes **the** factors indicating the unlikelihood that the peripheral canal ponds will be adversely affected **by** land disposal of wastewater.